City of Glendale

Air Quality Element

of the General Plan

Planning Division
February 1994

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RESOLUTION NO . 23, 009

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GLENDALE, CALIFORNIA, CERTIFYING THAT A CERTAIN NEGATIVE DECLARATION HAS BEEN PREPARED PURSUANT TO THE CALIFORNIA ENVIRONMENTAL QUALITY ACT.

WHEREAS, The Environmental and Planning Board considered Initial Study No. 93-20 prepared on behalf of the Air Quality Element of the Glendale General Plan, and adopted on October 21, 1993, a proposed Negative Declaration prepared pursuant to the California Environmental Quality Act; and

WHEREAS, the subject Negative Declaration reflects the independent judgment of the City of Glendale; and

WHEREAS, the Members of the Council have read and considered the subject Negative Declaration; and

WHEREAS, The Council hereby acknowledges the findings and recommendations of the Environmental and Planning Board with respect to the preparation of said Negative Declaration and the project;

NOW, THEREFORE, BE IT RESOLVED by The Council of the City of Glendale that it is hereby certified that Negative Declaration Number 93-20 was prepared pursuant to the California Environmental Quality Act, that the Council approves the responses to comments received during the environmental review process, and that the project will not have a significant effect on the environment.

Adopted this 15th day of February, 1994.

Mayor

RESOLUTION NO. 23,010

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GLENDALE, CALIFORNIA, ADOPTING THE AIR QUALITY ELEMENT OF THE GENERAL PLAN (GENERAL PLAN AMENDMENT 93 - 3)

WHEREAS, the Council has conducted noticed public hearings pursuant to the provisions of Sections 3-107 of the Glendale Municipal Code and Chapter 3, Title 7 of the Government Code of the State of California; and

WHEREAS, the City of Glendale is located in the South Coast Air Basin; and

WHEREAS, the 1989 and 1991 Air Quality Management Plans for the South Coast Air Basin have asked cities within the basin to adopt an air quality element or its equivalent to reduce emissions at a local governmental level; and

WHEREAS, the State of California Government Code allows cities to adopt optional elements into their General Plan; and

WHEREAS, the Council has received and accepted the proposed General Plan Amendment 93-3: Air Quality Element February 1994, prepared by the Planning Division; and

WHEREAS, the Transportation and Parking Commission reviewed the draft Air Quality Element at a noticed public hearing on October 25, 1993 and recommended adoption thereof to the City Council; and

WHEREAS, the Planning Commission of the City of Glendale held a noticed public hearing on the Air Quality Element on November 8, 1993 and recommended adoption thereof to the City Council; and

WHEREAS, the Council has found that General Plan Amendment No. 93-3 promotes and protects the public health, safety , comfort, convenience, and general welfare of the citizens of Glendale;

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF GLENDALE, that General Plan Amendment No. 93-3, being a new Air Quality Element of the General Plan, is hereby approved and adopted to meet State General Plan requirements, to comply with the 1991 Air Quality Management Plan for the South Coast Air Basin, to assess the City's Air Quality, to adopt new policies and programs to continue in its leadership role for reducing air emissions, and to provide for a healthy environment for all residents of Glendale.

This resolution shall become effective 30 days after the date of adoption.

Adopted this 15th day of February, 1994.

Mayor

AIR QUALITY ELEMENT
FEBRUARY 1994

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Summary and Purpose of Element

The Air Quality Element of the City's General Plan is created to recognize and consider the relationship between land use and air quality in Glendale's planning efforts, to identify ways in which Glendale can reduce its emissions of air pollutants through various policies and programs, and to comply with the region's Air Quality Management Plan. The overall goal of this element is for Glendale, as a city within a four-county air basin, to assist other governmental agencies in the attainment of healthful air for Glendale and other air basin residents, including those sensitive to air pollution. The Air Quality Element is an optional element of the General Plan as authorized by Section 65303 of the Government Code.

This element begins by identifying the need for and contents of an air quality element. Pollutants and their sources are identified to provide a better understanding of effective methods to reduce pollution. For example, since 96% of carbon monoxide emissions come from mobile sources, stationary source control would not provide much benefit in reducing carbon monoxide emissions. In contrast, particulate emissions come from a wide variety of sources, including natural windblown dust. These emissions are more difficult to control. Air toxics are also addressed, since recent information has demonstrated their control to be of great importance to human health and the environment.

After the development of goals and policy objectives, the Air Quality Element identifies existing and new or expanded programs by which the City can reduce air pollution. The element then evaluates these goals, policies, and programs. First, their relationship to other plans, including other general plan elements is addressed. The element then evaluates their compliance with other regulations. The development of a local air quality element is promoted as a means to comprehensively address local air quality programs required by the 1991 Air Quality Management Plan (AQMP), prepared jointly by the South Coast Air Quality Management District (SCAQMD) and the Southern California Association of Governments (SCAG).

The AQMP is the method by which the Southern California region demonstrates compliance with the Federal Clean Air Act, an act that has established maximum allowable pollutant concentrations. The AQMP identifies air pollution control measures to be undertaken by the Air Resources Board, SCAQMD, and other governmental agencies. It also sets air pollution reduction targets to be achieved by local governments. Without all localities in Southern California reducing emissions above and beyond those reduced by other governmental agencies, federal clean air standards could not be achieved. In addition to the continued health, property and quality of life costs associated with polluted air, non-compliance with the Federal Clean Air Act could result in a loss of federal funds to the region, along with other possible federal sanctions.

The method called for in the AQMP to achieve emission reductions locally is through the elimination of vehicle trips and vehicle miles traveled. Vehicle trips are responsible for the majority of pollutants in Southern California, and can be reduced through appropriate land-use planning at the local level. The SCAQMD has calculated regional vehicle trip reductions needed to achieve clean air. These trip reductions were then distributed among the four counties regulated by the SCAQMD. The SCAQMD gave the responsibility to determine vehicle trip reduction targets for each locality to the County transportation authorities. Glendale is required by the Los Angeles County Metropolitan Transportation Authority (LACMTA) to eliminate 5,235 daily vehicle trips, (about one percent of its daily vehicle trips) by 1994. This element identifies existing programs by the City which attempts to meet this target and new or expanded programs to meet this and future trip reduction targets. While the City's existing programs do not quite meet the target, the programs demonstrate the reduction of over 90% of the trips in this target. Future programs identified in this element would bring Glendale above the target trip reduction.

The preparation of this element began with the West San Gabriel Valley Air Quality Plan. Funded through a demonstration grant by the Air Quality Management District, sixteen member cities of the West San Gabriel Valley Planning Council (Alhambra, Arcadia, Duarte, El Monte, Glendale, LaCanada Flintridge, Monrovia, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, Sierra Madre, South El Monte, South Pasadena and Temple City) agreed in January, 1992 to participate in the development of an areawide air quality plan that could be adopted in some form by each local jurisdiction. Gruen Associates was hired to prepare the plan.

The first step in the West San Gabriel Valley Air Quality Plan process was to conduct a series of 20 interviews with staff members and elected officials of the participating jurisdictions. The purpose of the interviews was to determine local concerns and ideas, as well as to better understand the local policy and technical issues of the participating jurisdictions.

The consultant team then prepared an Issues and Opportunities Report, which analyzed the technical and policy issues in the study area. The intent of this report was to provide both local and regional perspectives on the air quality problems and issues of the West San Gabriel Valley. The Issues and Opportunities Report constituted a basis for identifying a menu of strategies that was suited to the West San Gabriel Valley and its cities. A draft menu of measures was developed in June, 1992 for public and jurisdictional discussion and review.

A series of public workshops were held in July 1992 to elicit public comment on the draft menu of air quality improvement measures. The public was informed of the workshops via mailings, articles, and notices in the local papers. The mailing list included citizens, community groups, and business groups from each of the 16 municipalities, as well as environmental organizations and applicable agencies through the region. The workshops afforded community representatives, business groups, the SCAQMD and individuals the opportunity to express their ideas and concerns regarding the menu of strategies prior to development of the Draft Air Quality Plan. This was followed by a meeting with the SCAQMD to gain the agency's input on the document. District comments have been included in the plan, which was accepted by participating cities, as a guidance document for the development of individual plans, regulations, or general plan elements.

A local Glendale task force representing builders, major employers, homeowners, the Chamber of Commerce, the Transportation and Parking Commission, the Planning Commission, and City staff met in September and October, 1993 to develop goals, policies and programs for the Air Quality Element. The group identified five goals which were considered to be a desirable future of air quality in Glendale. Policy objectives to achieve these goals were then recommended. The task force used the West San Gabriel Valley Air Quality Plan, as a starting point to discuss existing programs and new or expanded programs which should be included in the element. The task force recommendations proceeded to a joint study session of the City Council, Transportation and Parking Commission, and Planning Commission on October 12, 1993.

The Transportation and Parking Commission was given a draft of the Air Quality Element for review and comment in October,1993. This draft contained the first twelve proposed programs of this element. The Commission, at a public hearing on October 25, 1993, voted unanimously to recommend incorporation of the Air Quality Element into the City's General Plan with two additional programs as follows: (1) The bicycle master plan to be prepared by the City (Program No. 9) should include consideration of areas where electric "golf-cart" type vehicles may be appropriate; and (2) A new program (No. 13) should be added which involves assessing the possibility of an electric trolley system (bus or rail) to serve downtown Glendale, and to implement such system as appropriate. With the above changes, the Planning Commission also recom-

mended inclusion of the element in the City's General Plan. Recommendations received from SCAG on December 30, 1994 included minor changes to the text and an additional program to encourage alteration or rerouting of truck trips during peak-hour travel periods. These have also been included in the Air Quality Element.

This element has been prepared primarily with emission forecasting and regulations contained in the 1991 AQMP and 1993 Trip Reduction Ordinance Handbook. The Air Quality Element, as a policy and program document, is subject to change due to changing technology, knowledge, or regulations from other governmental levels. Nonetheless, the element demonstrates a long-term commitment on the part of the City of Glendale to achieve healthful air.

Background Report

A. INTRODUCTION OF ISSUES

1. THE NEED FOR AN AIR QUALITY ELEMENT

Land-use decisions made at a local level affect air quality either through stationary source emissions, or through vehicle trips generated. The land uses in Southern California cities also have air quality impacts on other jurisdictions due to air pollutant travel. The South Coast Air Quality Management District was created to reduce air pollution at a regional level. Its current plan calls for Southern California cities to assist in minimizing emissions through land-use planning and other local programs. This local control avoids the need for the District to impose regional land-use regulations to achieve clean air

Regional Air Quality

Around the turn of the century, Southern California promoters boasted of the healthful air in Los Angeles County Sanitariums were established, particularly in the foothills of the San Gabriel Mountains, to bring tuberculosis patients from the East Coast of the United States to the clean, dry air of Southern California. Rapid industrial growth followed, and, by the mid-1940s, Los Angeles County had attained the most polluted air in the nation. Even today, with the strictest air regulations in the nation, Southern California still exceeds federal clean air standards on more days than any other region in the nation. Much of this is due to the unique regional climate and topography of the South Coast Air Basin, which surrounds Glendale and includes portions of four counties and 143 cities (Figure 1).

The following section, adapted from the West San Gabriel Valley Air Quality Plan Issues and Opportunities Report, was prepared for the City of Glendale and other member cities of the West San Gabriel Valley Planning Council by Gruen Associates. It describes the climactic conditions which make smog a regional problem and show how pollution emitted near the coast could affect air quality in Glendale, as well as how Glendale's emissions could contribute to air pollution in the West San Fernando Valley. Because air pollution does not respect jurisdictional boundaries, all cities must work together to address this regional problem.

Regional Meteorology - The climate of the South Coast Air Basin is determined by its terrain and geographical location, as well as its climatological location beneath a subtropical high. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high-pressure zone

[1]SCAQMD. Air Quality Handbook for Preparing Environmental Impact Reports. 1987.

of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild climatological pattern is interrupted by periods of extremely hot weather, winter storms, or Santa Ana winds.[1]

Wind - Wind patterns in the basin are characterized by daytime sea breezes resulting from vertical currents produced by heating on the mountain slopes, and by nighttime land breezes or drainage flows resulting from radiant cooling of the air masses. These conditions dominate the wind patterns in the basin during the dry summer concentrations (see Figure 2). During these conditions, some pollution produced in the western area of the basin is pushed up against the San Gabriel Mountains and trapped; some is transported out of the basin through the mountain passes or lifted by the vertical currents produced by heating on the mountain slopes.

During the winter rainy season, the sea-land breeze regime is broken by wind flows associated with storms moving through the area from the northwest and by Santa Ana conditions (see Figure 3). Santa Ana conditions occur when a large high pressure system builds over the Great Basin. This system pushes air southward over the San Gabriel and San Bernardino Mountains into the Los Angeles Basin and then out the sea. The air is warmed by compression as it descends the mountainside into the basin. Sustained wind speeds of 10-60 miles per hour with higher gusts are not uncommon, resulting in increased pollution dispersion and transport out to the ocean.

Figure 1: The South Coast Air Basin

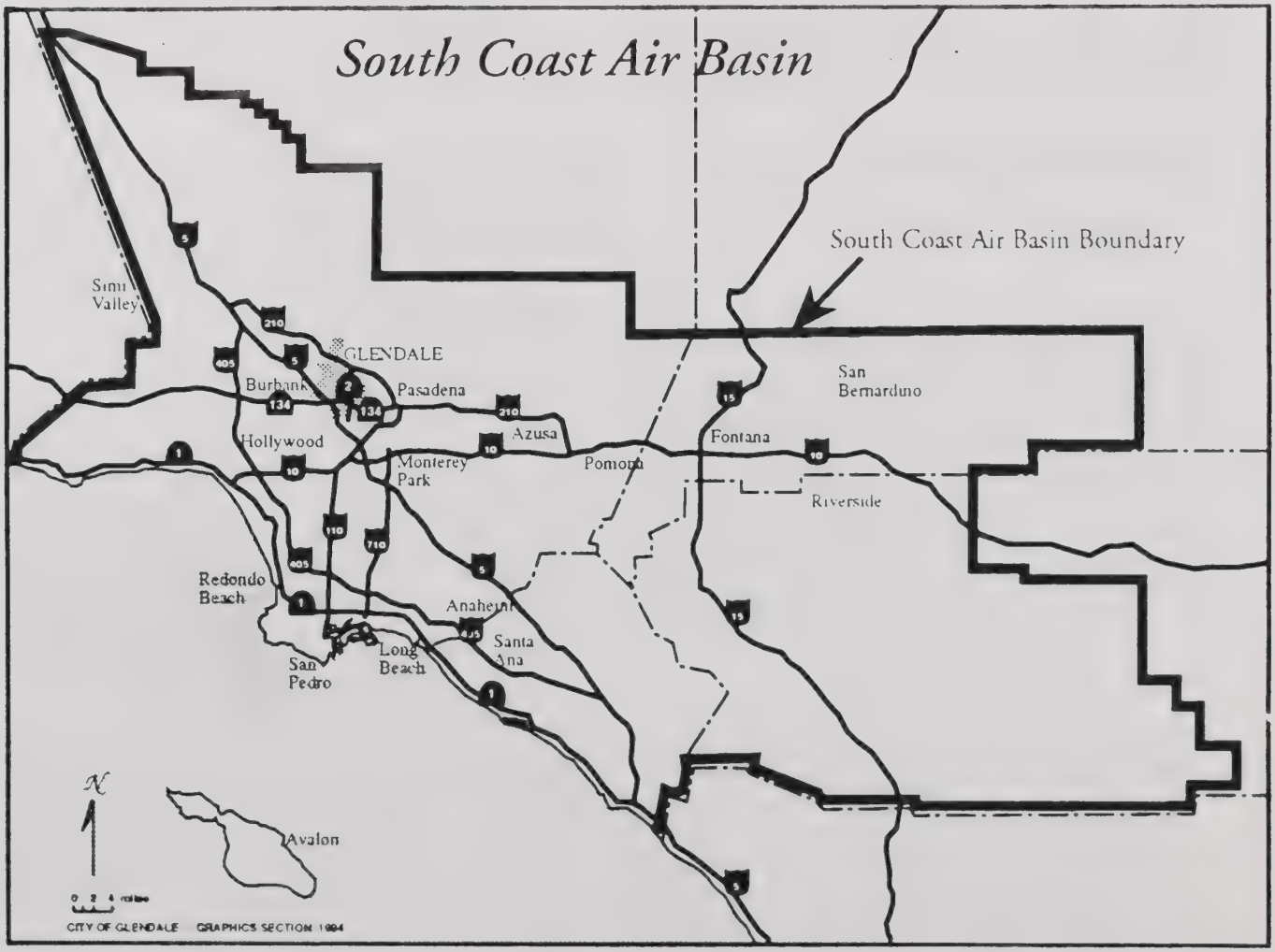
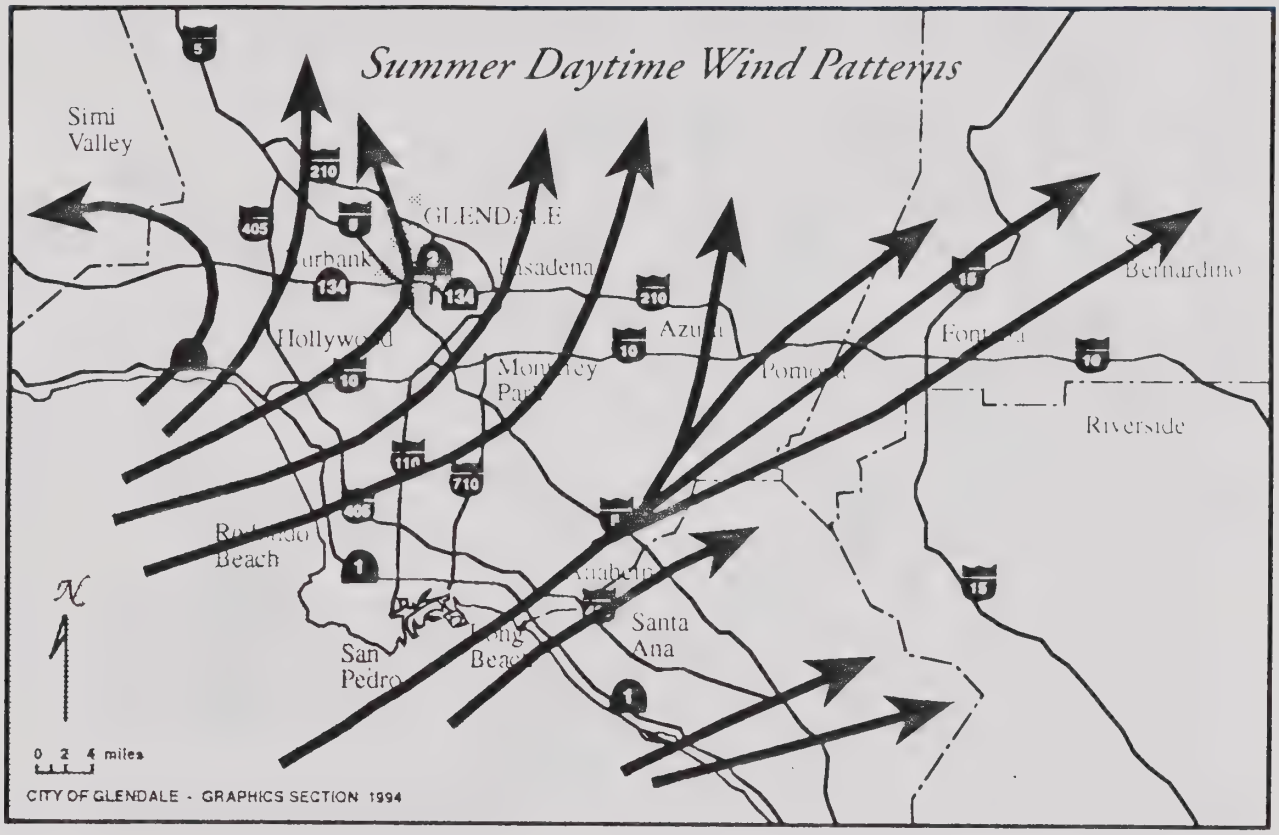


Figure 2: Typical Summer Wind Patterns



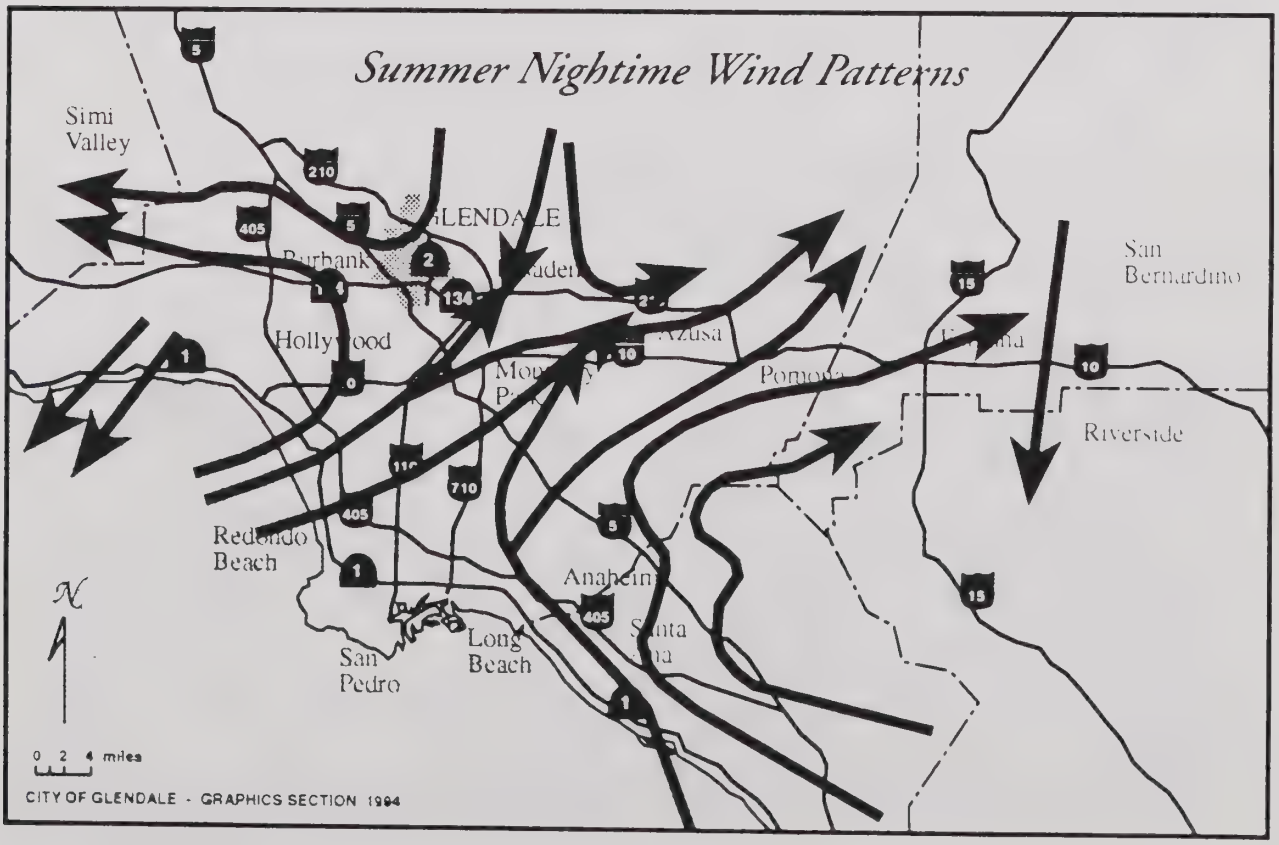
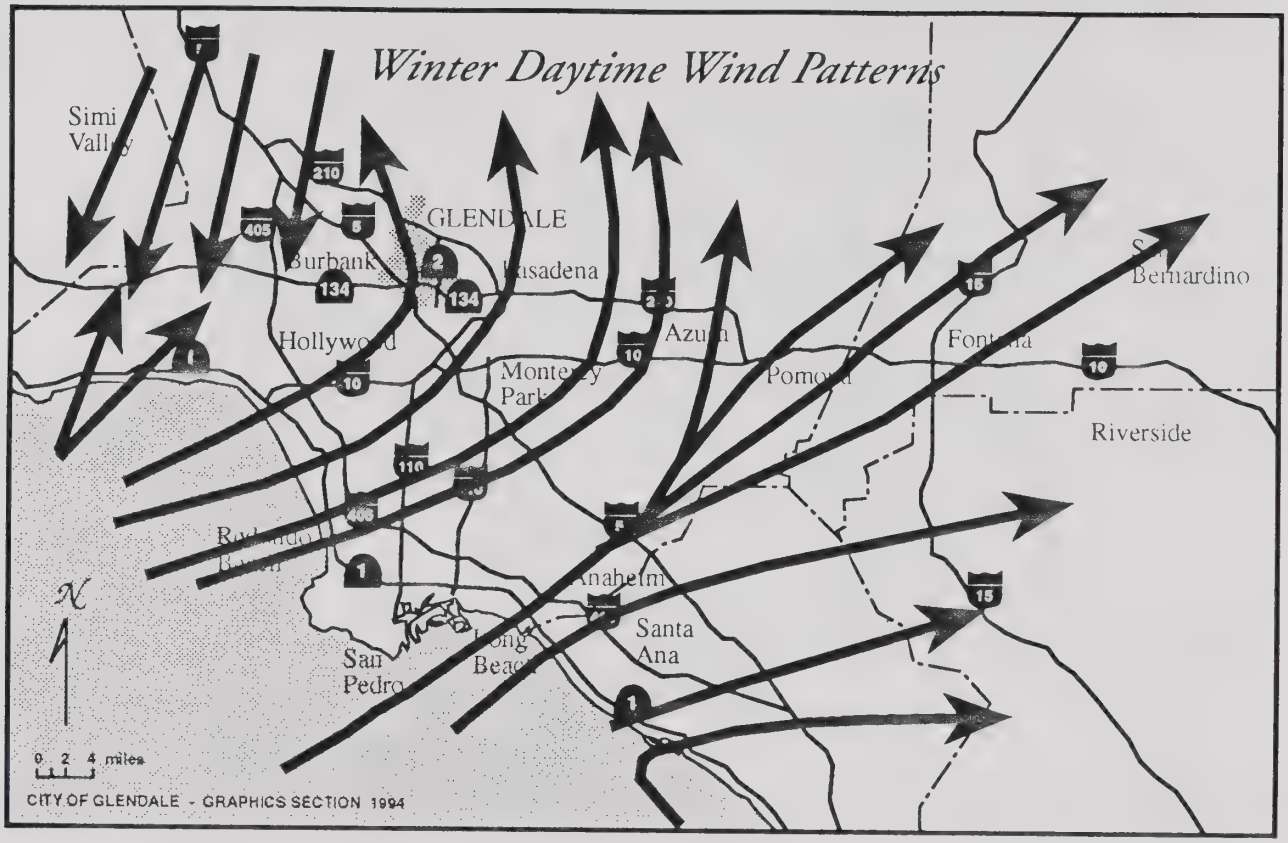
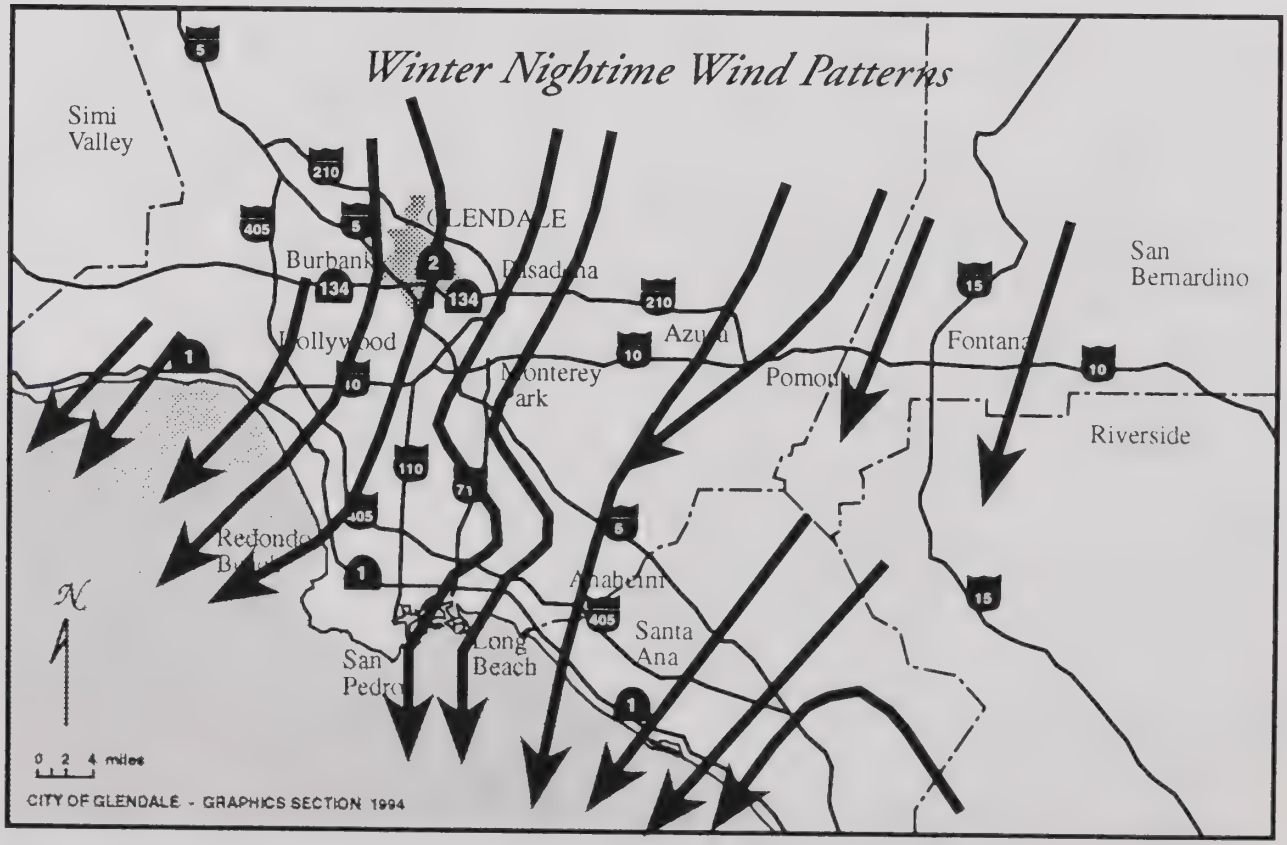


Figure 3: Typical Winter Wind Patterns





Temperature and Inversions - The usual condition of the lower atmosphere is decreasing temperature with increasing altitude, because of expansional cooling. A reversal of this state, increasing temperature with increasing altitude, is called an inversion. The layer of the atmosphere in which the reversal occurs is called an inversion layer. An inversion can exist at the surface or any height above the surface. The height from the ground surface to the bottom of the inversion layer is called the mixing height because vertical dispersion of pollutants is inhibited by the bottom of the inversion layer, trapping pollutants nearer to the ground. Pollution is introduced into the inversion layer by the undercutting sea breeze, by the return flow from mountain ridges, and by emissions into the layer from tall stacks. As the day progresses, the surface layer is heated until it reaches the potential temperature of the inversion layer. The inversion eventually breaks allowing greater vertical dispersion of pollutants.

Sunlight - Periods of intense sunlight activate photochemical mechanisms that produce secondary pollutants, which differ chemically from primary pollutants in that they are created by reactions taking place within the atmosphere rather than being emitted directly into the air. One such secondary pollutant is ozone, which is formed via photochemical reactions driven by the sun and fed primarily by two precursor emissions; reactive organic gases and oxides of nitrogen.

Interbasin and Intrabasin Transfer - On practically all spring and early-summer days, most of the pollution produced during an individual day is moved out of the South Coast Air Basin. During the summer smog season, however, the average morning wind speed in Downtown Los Angeles is less than 5 miles per hour on 80% of the days creating stagnation in the air, which allows pollutants to concentrate within the Basin.[2]

Pollutant transport within the South Coast Air Basin follows a nighttime offshore drainage flow and the daytime reversal to an onshore flow. Variations in this basin wind pattern account for the complex pollution transport routes that are found to vary day-by-day and seasonally. Transport routes vary for each pollutant type. However, the major mountain passes are common routes during the summer smog season. Lancaster, Victorville, and Palm Springs are immediate receptors for pollution generated in the Basin and transported through Newhall Pass, Cajon Pass, and Beaumont Pass, respectively.

Regulations by Various Levels of Government

Air quality in Los Angeles County became so poor by the mid-1940s, that severe inversion patterns would cause ozone concentrations that led to the hospitalization and premature deaths of thousands of Southern Californians. The County Board of Supervisors responded to this problem through the creation of the nation's first Air Pollution Control District in 1946. The District initially focused its efforts on the control of visible soot, smoke, and dustfall from industry. Not much was known at the time about the invisible components of air pollution. The following summarizes current air quality planning and regulating efforts of federal, state, and regional governing bodies.

Federal Clean Air Act - The Federal Government adopted the Federal Clean Air Act (FCAA) in 1955 in response to worsening air quality in the nation's cities. By this time, the automobile was recognized as a major contributor to air pollution. The Federal Clean Air Act, now administered by the Environmental Protection Agency (EPA), was comprehensively amended in 1990. The FCAA mandates that the nation as a whole achieve federal clean air standards. The EPA reviews plans from each state which must demonstrate how each region of the state is to achieve these standards. The FCAA requires the EPA to implement its own measures in regions which fail to demonstrate attainment of clean air within certain target dates. In California, the Air Resources Board is responsible for preparing the State plan. The State plan consists of a compilation of regional air quality plans. The South Coast Air Quality Management District (SCAQMD) and Southern California Association of Governments (SCAG) are responsible for preparing the Southern California's Air Quality Management Plan, which should bring the region in compliance with federal clean air standards by December 31, 2007.

California Clean Air Act (CCAA) - Adopted in 1988, the California Clean Air Act requires each region of the State to adopt a plan to attain the stricter California clean air standards. The Air Resources Board is responsible for reviewing regional plans compliance with the CCAA. The plans must address toxic air emissions, global warming, and ozone depletion in addition to clean air standards. The 1991 Air Quality Management Plan prepared by SCAG and SCAQMD has responded to this State mandate.

Air Resources Board Rules - The California Air Resources Board (ARB) is also responsible for overseeing statewide vehicle emission standards, fuel specifications, and consumer products (i.e. gasoline lawnmowers, paints, etc.) standards. The State of California first began requiring emission control devices on vehicles in 1963, and now has standards for new vehicles sold in the State which become progressively stricter through the year 2003. The ARB is also requiring that by 1998, 2% of vehicles sold

[2]SCAQMD. A Climatological Air Quality Profile, South Coast Air Basin. 1980.

within the State are "zero-emission" vehicles. This requirement climbs to 5% by 2001 and 10% by 2003.

South Coast Air Quality Management District (SCAQMD) Regulations - The primary charge of the SCAQMD is to develop a plan and implementing regulations to achieve federal and state clean air standards in the South Coast and portions of the Southeast Desert Air Basins. These air basins include 13,350 square miles in Los Angeles, Orange, Riverside, and non-desert San Bernardino County, with a population of over 14 million people. The SCAQMD originally only had the authority to regulate stationary emission sources. However, in 1978, the State granted the SCAQMD the ability to regulate mobile and area sources of air pollution. Regulation XV, the District's first mobile source regulation, requires employers of 100 or more to reduce commute trips, thereby reducing vehicle emissions.

Local Control

The 1991 Air Quality Management Plan allows for cities within the South Coast Air Basin to develop individual programs to reduce emissions by reducing vehicle use and energy consumption. Two cities may take two very different approaches to reach the same goals. This Air Quality Element sets forth an approach to meet Glendale's target trip reduction in a manner both efficient and equitable to the City's residents and businesses.

In order for the regional Air Quality Management Plan to demonstrate attainment of federal and state clean air standards, the SCAQMD had to plan for the possibility that individual cities may fail to develop adequate programs. The District has the authority to adopt its own measures under State law. In addition, the Southern California Association of Governments has the responsibility under the Federal Clean Air Act to review federally-funded transportation and wastewater projects for conformity with the AQMP. The AQMP extends this review authority to SCAG for large regionally significant development projects when an individual City does not have an acceptable local air quality plan. An acceptable plan must be consistent with SCAG's Air Quality Element Guidelines, demonstrate a commitment to implement local government control measures, include a time schedule and delegation of staff responsibilities, and prepare annual Reasonable Further Progress reports. This element has been reviewed by SCAG and has been reviewed by SCAG and has been revised as necessary to meet these criteria.

District Backstop Rule

Although the AQMP relies on local government to help achieve emission reductions, the AQMP must still be enforceable in order to comply with the FCAA. In late 1993, the SCAQMD has developed a proposed "backstop rule." This rule provides District implementation of Transportation Control Measures in cities which have been unable to achieve their vehicle trip reduction targets of 1994.

The backstop rule would apply to cities which have achieved less than 90 percent of their vehicle trip reduction targets. Its measures have been developed in two stages: one set of regulations for cities which have achieved 75 to 89 percent of their vehicle trip reduction targets, and additional rules for cities which have achieved less than 75 percent of their targets. Section IV of this Air Quality Element documents vehicle trip reductions which exceed 90% of Glendale's target of 5,235 daily vehicle trips.

2. CONTENTS OF THE AIR QUALITY ELEMENT

Air Quality Management Plan Control Measures

The 1991 Air Quality Management Plan depends upon emission-reducing measures which use current technology, significant advances in current technology, and new technology. The AQMP has identified 135 emission-reducing measures which utilize current technology. Of these, 41 would require some form of implementation by local government. These 41 measures are listed in Table 1. The table also indicates other agencies responsible for each measure. For example, AQMP Control Measure 5 (Non-recurrent Congestion) ties directly into programs undertaken by SCAG, CALTRANS, and the LACMTA as part of the Congestion Management Program. The policies and programs identified in this element reference the specific control measure(s) upon which they are based.

Local Trip Reductions

In 1992, the SCAQMD developed a Carbon Monoxide federal clean air standards attainment plan. This plan documented the removal of 264 daily tons of carbon monoxide by the year 2000. Since 96% of carbon monoxide emissions come from mobile sources (87% from on-road vehicles), the focus of the plan was on the reduction of vehicle trips. The plan combined eight control measures from the 1991 AQMP (1a, 1b, 2a, 2b, 2d, 2e, 17, and M-H-3) into one performance-based measure (FC-4) for local cities to prepare a Trip Reduction Ordinance.

The Trip Reduction Ordinances adopted by all 143 cities and 4 counties in the South Coast Air Basin must cumulatively reduce 365,000 daily trips by 1994. This target is

TABLE 1
Local Governments - Tier 1 Control Measures

AQMP Measure No.	Title	Implementing Agency	Proposed Adoption Date	Proposed Implementation Date
A-D-2	Control of Emissions from Swimming Pool Water Heating (NOx)	SCAQMD/Local Gov't	1992	1999
A-D-3	Control of Emissions from Residential & Commercial Water Heating (NOx)	SCAQMD/Local Gov't	1992	2006
A-E-3	Control of Dust Emissions from Agricultural Tilling (PM10)	Local Gov't	1994	1996
A-F-2	Control of Emissions from Construction and Demolition Activities and On site Vehicular Flow (PM10)	SCAQMD/LocalGov't	1992	1994
A-F-4	Low Emission Methods and Materials for Building Construction (ROG, PM10)	Local Gov't	1994	1996
A-F-5	Control of Dust Emissions from Wind Erosion (PM10)	SCAQMD/Local Gov't	1992	1997
M-G-6	Eliminate Excessive Car Dealership Cold Starts (ROG, CO, NOx)	SCAQMD/Local Gov't	1994	1994
M-G-7	Eliminate Excessibe Curb Idling (ROG, CO)	SCAQMD/Local Gov't	1993	1994
M-G-9	Eliminate Emissions from Advertising Vehicles (All Pollutants)	SCAQMD/Local Gov't	1994	1995
M-H-1	Environmental Review Program (ROG, NOx, CO)	SCAQMD/Local Gov't	1991	1992
M-H-2	Trip Reduction for Schools (ROG, NOx, CO)	SCAQMD/Local Gov't	1992	1993
M-H-3	Supplement Development Standards (ROG, NOx, CO)	Local Gov't	1993	1993
M-H-4	Special Activity Centers (ROG, NOx, CO)	SCAQMD/Local Gov't	1993	1994
M-H-6	Truck Programs (ROG, NOx, CO)	SCAQMD/Local Gov't	1992	1993
M-H-7	Registration Program (Vehicle Trip Monitoring)	SCAQMD/Local Gov't	1991	1992

TABLE 1 (continued)
Local Governments - Tier 1 Control Measures

AQMP Measure No.	Title	Implementing Agency	Proposed Adoption Date	Proposed Implementation Date
M-I-7	Eliminate Leaf Blowers (All Pollutants)	SCAQMD/Local Gov't	1993	1994
1a	Person Work Trip Reduction (ROG, NOx, CO)	Local Gov't/SCAG/ CTS/SCAQMD	12/92	2000
1b	Non-Motorized Transportation (ROG, NOx, CO)	Local Gov't/SCAG/ SCAQMD	12/92	2000
2a	Employer Rideshare and Transit Incentives (ROG, NOx, CO)	Local Gov't/ SCAQMD/SCAG/CTS	12/92	1994
2b	Parking Management (ROG, NOx, CO)	Local Gov't/SCAQMD	12/92	1994
2d	Merchant Transportation Incentives (ROG, NOx, CO)	Local Gov't/SCAQMD	12/92	1994
2e	Auto Use Restrictions (ROG, NOx, CO)	Local Gov't/SCAQMD	12/92 .	1994
2f	HOV Facilities (ROG, NOx, CO)	CALTRANS/ LACMTA/Local Gov't	(1)	(1)
2g	Transit Improvements (ROG, NOx, CO)	LACMTA/UMTA/ CALTRANS/Local Gov't/Public Transit Providers	(1)	(1)
3a	Truck Dispatching, Rescheduling and Rerouting (ROG, NOx, CO)	Local/Gov't/ SCAQMD/SCAG/ CALTRANS/CHP	12/92	1994
4	Traffic Flow Improvements (ROG, NOx, CO)	CALTRANS/Local Gov't/LACMTA/ SCAG	1989-2000	1991
5	Nonrecurrent Congestion (ROG, NOx, CO)	CALTRANS/CHP/ SCAG/SCAQMD/ LACMTA/Local Gov't	1990-1994	1994
12a	Paved Roads (PM10)	SCAQMD/ARB/Local Gov't/CALTRANS/ Sanitation & Flood Districts	12/92	1994

1. To be determined by implementing agencies
2. VMT Targets are included as an implementation option to the jobs/housing ratio for this control measure.

TABLE 1 (continued)
Local Governments - Tier 1 Control Measures

AQMP Measure No.	Title	Implementing Agency	Proposed Adoption Date	Proposed Implementation Date
12b	Unpaved Roads (PM10)	ARB/CALTRANS/ Local Gov't	12/93	1994
16	High Speed Rail (ROG, NOx)	SCAG/Local Gov't/ CALTRANS	12/91	1997
17	Growth Management (ROG, NOx, CO) 2	SCAG/Local Gov't	12/92, 12/94	1997
E-D-1a	Residential Sector - Electricity Savings (NOx)	SCAQMD/CEC/Local Gov't/PUC	1994	2007
E-D-1b	Residential Sector - Natural Gas Savings (All Pollutants)	SCAQMD/CEC/Local Gov't/PUC	1993	2006
E-C-1a	Commercial Sector - Electricity Savings (NOx)	SCAQMD/CEC/Local Gov't/PUC	1993	2008
E-C-1b	Commercial Sector - Natural Gas Savings (All Pollutants)	SCAQMD/CEC/Local Gov't/PUC	1994	2009
E-C-2a	Industrial Sector - Electricity Savings (NOx)	SCAQMD/CEC/Local Gov't/PUC	1994	2008
E-C-2b	Industrial Sector - Natural Gas Savings (All Pollutants)	SCAQMD/CEC/Local Gov't PUC	1995	2009
E-C-2c	Industrial Sector - Glass Recycling (NOx)	SCAQMD/CEC/Local Gov't	1992	1998
E-C-2d	Industrial Sector - Paper Recycling (NOx)	SCAQMD/CEC/Local Gov't	1994	2001
E-C-3	Local Government Sector - Electricity and Natural Gas Savings (All Pollutants)	SCAQMD/CEC/Local Gov't/PUC	1995	2010

ARB: California Air Resources Board
CALTRANS: California Department of Transportation
CEC: California Energy Commission
CHP: California Highway Patrol
CTS: Commuter Transportation Services
LACMTA: Los Angeles County Metropolitan Transportation Authority
PUC: California Public Utilities Commission
SCAG: Southern California Association of Governments
SCAQMD: South Coast Air Quality Management District
UMTA: Urban Mass Transportation Administration

in addition to those trips reduced by employers of 100 or more under Regulation XV. Each City's portion is determined by the appropriate County Transportation Agency. Glendale has been asked to adopt an ordinance or other form of commitment which reduces 5,235 daily vehicle trips, or about one percent of its vehicle trips by 1994.

This Trip Reduction Ordinance must be quantifiable, implement Transportation Control Measures identified in the 1991 AQMP, be enforceable, achieve the vehicle trip target, show adequate staff and financial resources for implementation, and include a monitoring program to document trip reductions. This Air Quality Element identifies and describes existing programs in Glendale which achieve over 90% of the vehicle trip targets in the 1991 AQMP and 1992 Carbon Monoxide Plan. Estimates of the daily trip reductions of each program are included in the evaluation section (Section IV). Future programs would bring the City to meet the daily vehicle trip reduction target.

B. AIR QUALITY IN GLENDALE

1. CRITERIA AIR POLLUTANTS

The Environmental Protection Agency has identified six main pollutants in the air which affect human health. These six pollutants are ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, fine particulate matter, and lead. The State Air Resources Board has added sulfates, ethylene, visibility, hydrogen sulfide, and vinyl chloride as components of air quality. An understanding of the sources of these pollutants is necessary before the best methods of reduction can be determined.

Ozone (O_3)

Ozone, which is commonly referred to as L.A. smog, is a secondary pollutant, not directly emitted from any single source. Rather, it is formed when reactive organic gases, nitrogen oxides, oxygen, and other hydrocarbons mix under sunlight. Ozone is an unstable molecule, most concentrated in the air we breathe during the afternoon, breaking down quickly after sundown. The intensity of the sunlight and strength of temperature inversions make ozone concentrations higher during the summer months. As a secondary pollutant, ozone can only be controlled by reducing the pollutants which form ozone, nitrogen oxides and reactive organic gases. In the South Coast Air Basin, mobile sources are responsible for 62 percent of these smog-forming compounds.

Carbon Monoxide (CO)

Carbon monoxide is an odorless, colorless gas which is emitted by incomplete combustion of fuels. About 96 percent of carbon monoxide is generated from mobile sources (87% from on-road vehicles), with most of the rest from fuel combustion at stationary sources. Carbon monoxide is most concentrated around freeways and major streets. The late fall and winter usually have the highest concentrations of carbon monoxide, due to frequent surface-level inversions. Carbon monoxide concentrations are also highest during peak travel hours.

Nitrogen Dioxide (NO_2)

Nitrogen dioxide is formed by a reaction of nitric oxide (NO) with atmospheric oxygen (O_2). It is a brown-colored gas which is a component of the larger group of oxides of nitrogen (NO_x). The oxides of nitrogen are primarily emitted through incomplete fuel combustion. Mobile sources account for between 74 and 76 percent of NO_x emissions in Southern California. The primary stationary sources of NO_x emissions are electricity generating plants, oil refineries and household and business natural gas uses. NO_x emissions in Southern California are responsible for reduced visibility, fine particulate matter, and acid deposition, including acid fogs. In addition, they combine with other chemicals in the atmosphere to form ozone and toxic air contaminants.

Sulfur Dioxide (SO_2) and Sulfates

Sulfur dioxide and sulfate emissions are grouped together as sulfur oxides (SO_x). Sixty percent of sulfur oxide emissions come from mobile sources. Most of these mobile SO_x emissions come from locomotives and other off-road mobile sources, due to the higher sulfur content of the fuels. Stationary SO_x emission sources include petroleum refining, electricity generation, and manufacturing processes. Sulfur dioxide and sulfate emissions are a greater problem in areas of the country where coal is burned for electricity and heat. In the northeast U.S., these emissions are largely responsible for acid rain. In Southern California, sulfates are a major component of fine particulate matter, along with nitrates and dust particles.

Fine Particulate Matter (PM_{10})

Fine particulate matter is also known as PM_{10}, since it includes particulate matter 10 microns or less in diameter. Particles this small could easily travel into the lungs, especially with mouth-breathing. PM_{10} in Southern Califor-

nia includes a mix of natural and human-created substances. It includes sulfates, nitrates, metals, elemental carbon, sea salt, soil, organics, and other materials. Sources of PM_{10} emissions vary widely and are the most difficult to control. They include direct emissions, as well as particles formed in the atmosphere. PM_{10} emissions come in both liquid and solid forms. Major sources include those processes which form nitrates and sulfates, as well as agricultural operations, wind blown dust, paved and unpaved road dust, tire wear from vehicles, and grading and construction operations. Windblown dust accounts for 20% of Southern California PM_{10} emissions, with the remaining particulate matter resulting from human activities.

Lead

Lead particles in the atmosphere are extremely dangerous to humans, even at very low levels. Atmospheric lead in Southern California used to exceed federal and state health standards every day of the year However, since 1978, average lead concentrations have decreased 98 percent. This is due to the removal of lead from gasoline. At present, the main sources of atmospheric lead are manufacturing industries, especially smelters and car battery recyclers. Large smelters occasionally contribute to increased lead levels in their immediate vicinity, but the levels are still usually below state and federal levels unless control equipment is malfunctioning.

2. HEALTH EFFECTS OF AIR POLLUTION

Many public and private studies have been and continue to be conducted which attempt to understand the relationship between air pollution and human health. These studies include the evaluation of short-term exposures to heavy concentrations of pollutants as well as long-term exposures to lower doses of pollutants. Both clinical and epidemiological studies on the health effects of air pollution have been conducted. Clinical tests measure air pollution impacts on health through controlled experiments on both humans and animals. Epidemiological studies compare incidences of illness between polluted and unpolluted areas, or between different population groups within a single area.

The following section on the health effects of specific pollutants is taken from the Environmental Impact Report for the 1991 Air Quality Management Plan, as well as from a booklet entitled "Where Does It Hurt?", both prepared by the South Coast Air Quality Management District. These two sources provide an excellent synopsis of the conclusions from the numerous studies on the health effects of air pollution.

Glendale residents, like all other Southern California residents, *are exposed to a complex mixture of pollutants in the ambient air. The evaluation of health impacts is complicated by a number of factors. First, each of these pollutants alone produces different adverse health effects. However, the usual situation is to be exposed to several pollutants simultaneously. Furthermore, the level of exposure for a given individual will change depending on daily activities (e.g. exercise versus rest; children versus working adults), time of day and location in the Basin.*

The acute symptoms most often reported in conjunction with air pollution include irritation of the eyes and throat, headache, fatigue, tightness in the chest or chest pain, wheezing and cough. As noted above, the occurrence of a particular symptom or group of symptoms will depend on the mix of pollutants the level of exposure and individual sensitivity of the exposed individual. Health effects of individual criteria air pollutants are summarized below.

Ozone (O_3)

Ozone damages cells in the lung's airways, making the passages inflamed and swollen. This causes respiratory irritation and discomfort and makes breathing more difficult during exercise. Ozone also reduces the respiratory system's ability to fight infection and to remove foreign particles. People who suffer from respiratory diseases such as asthma, emphysema and chronic bronchitis are more sensitive to ozone's effects. Children, the elderly and persons who exercise heavily are also more sensitive. Heat and high humidity can make symptoms and lung dysfunction worse, according to the Environmental Protection Agency (EPA). High temperatures (87 to 104 degrees) and/or humid conditions combined with exercise during ozone exposure have been shown to reduce lung function more than similar ozone exposures at more moderate temperature (77 degrees) and humidity.

The EPA also reports these important consequences of ozone exposure:

* *Ozone interferes with normal functions of the human lung at concentrations as low as 0.12 parts per million (the federal clean air standard). In a series of controlled studies of people during intermittent heavy exercise, normal lung function declined by 10% or more in five to 20 percent of subjects. Lung function was further reduced as the ozone level increased. At 0.20 parts per million (ppm) in one set of studies, about half the subjects showed lung function changes of more than 20 percent.*

* *Ozone causes pain and discomfort at levels as low as 0.12 ppm. In the same series of experiments, ozone caused chest pain, coughing, wheezing, pulmonary and nasal congestion, labored breathing, sore throat, nausea, and faster breathing rate. The number of people affected and the number of*

effects both rose with increased ozone levels. Only increased coughing was observed at 0.12 ppm, the other responses occurred at the higher concentrations.

* Children suffer persistent reduction in lung function after a five-day ozone episode. (Maximum one-hour levels were more than 0.12 ppm on four of the five days and reached 0.18 ppm on one day). In a field study of children during normal activities at summer camp, lung function measurements were taken before, during and after the ozone episode. Lung function failed to return to its pre-episode level for many days after the ozone episode passed.

* Animal immune systems suffer when exposed to ozone at levels of 0.08 ppm to 0.15 ppm. Animal studies show that ozone interferes with normal functioning of many parts of the immune system. In one study, 0.08 ppm ozone for three hours resulted in increased susceptibility to acute respiratory infection. According to the EPA, a large body of evidence clearly demonstrates that exposure to ozone can impair the immune defense systems of animals. Technical and ethical considerations have limited similar research on humans.

* Permanent lung structure damage has been observed in animals at ozone levels of 0.20 ppm (Stage 1 Smog Alert). Studies show that ozone damages sensitive lung tissue, leaving a small amount of scarring. If exposure is repeated or continued for long periods of time, scar tissue can cause permanent lung damage. Permanent damage has been observed only in studies lasting weeks to months, at ozone exposure of at least 0.20 ppm. However, some recent animal studies indicate that short-term exposures at or near 0.12 ppm cause inflammation- which some believe is the first step toward more permanent injury.

* Human epidemiological studies link ozone and need for respiratory treatment. One researcher found a correlation between higher ozone levels and frequency of hospital treatment for respiratory problems. A link between ozone and asthmatic attack rates has been observed at levels below 0.15 ppm.

Carbon Monoxide (CO)

Carbon monoxide replaces oxygen in the blood , reducing its ability transport oxygen to vital organs in the body. The ambient air quality standard for carbon monoxide is intended to protect persons whose medical condition already compromises their circulatory system's ability to deliver oxygen. These medical conditions include certain heart ailments, chronic lung diseases and anemia. Persons with these conditions have reduced exercise capacity when exposed to low levels of CO. Heart patients experience angina (chest pain) attacks sooner. Healthy people can also have difficulty exercising. Fetuses are at risk because their blood has an even greater affinity to bind carbon monoxide. Smokers are also at risk from ambient CO levels because smoking increases the background level of CO in their blood. Finally, low levels of carbon monoxide have been found to cause people to suffer reductions in visual perception, manual dexterity, ability to learn, and performance of complex sensorimotor tasks such as driving.

Nitrogen Dioxide (NO_2)

Occupational health studies have shown that nitrogen dioxide can be fatal at high concentrations. At lower levels, but still higher than those in the outdoor air, it can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections like influenza. Nitrogen oxides also contribute to acid deposition in the South Coast Air Basin, and make up a major part of fine particle pollution (PM_{10}).

The EPA has stated that "there presently is no reliable scientific evidence" of adverse effects in humans from long-term nitrogen dioxide exposure at outdoor air levels. But combined evidence from controlled animal and human exposure studies and community indoor studies strongly suggests that nitrogen dioxide may harm sensitive population groups exposed to levels at or near those reached outdoors.

Sulfates

Sulfates are a family of compounds which includes sulfuric acid. The health effects of sulfates are thought to be largely related to their acidity. Sulfuric acid is the most irritating sulfate. Asthmatics are more sensitive to the effects of sulfates and can experience constriction of the airways. Small sulfate levels have been associated with coughing, bronchitis and other respiratory illness in children. Sulfuric acid may aggravate the symptoms of people with chronic lung diseases.

Fine Particles (PM_{10})

Particle pollution can cause both short-term and long-term reduction in lung function. It contributes to chronic respiratory illness, cancer and premature death.

Fine particles known as PM_{10} - less than 10 micrometers in size- are especially harmful because they can reach the deepest recesses of the lungs without being captured by the natural cleansing action of the respiratory system.

Nitrates, sulfates and dust particles are major components of PM_{10}. The EPA estimates that as much as eight percent of urban non-smoker lung cancer risk is due to PM_{10} in soot from diesel trucks, buses and cars.

Inhaled particles pose a health risk when they penetrate deeply into the respiratory tract. The risks associated with particles in the lung area are much greater than for particles that rest in the

throat. Most particle penetration into the lungs occurs during mouth breathing

A number of long-term studies have found that people living in areas with high particle pollution tend to have more respiratory problems and lower levels of lung function than people in cleaner areas. Two community studies cited by EPA in 1982 reported lung function decline in children and adolescents associated with short-term particle exposures.

Lead

Lead is a toxic heavy metal that is persistent in the environment and can accumulate in living tissues. It has no known beneficial function in the human body. The primary health concern with lead pollution is the potential for neurologic effects in children that may affect learning and intelligence. Lead also interferes with specific enzyme systems in the body. Fetuses and young children are particularly sensitive population groups due to physiological sensitivity during fetal development when the central nervous system is undergoing rapid growth.

Table 2 summarizes the health impacts of various pollutants. A 1989 study by the SCAQMD estimated the annual health benefits of meeting federal clean air standards for ozone and PM_{10} in the South Coast Air Basin at $8.9 billion.

Sensitive Populations

Ozone (O_3) - Ozone, carbon monoxide, and fine particulate matter are the most harmful pollutants which currently exceed federal and state standards in Glendale. The following describes Glendale residents who would be most sensitive to these pollutants, taken from the "Where Does It Hurt?" booklet prepared by the South Coast Air Quality Management District.

Traditionally, people more likely to be affected by ozone have been labeled "sensitives". If that word conjures up an image of a frail 80-year or a newborn infant, that's right- and wrong. The elderly and the young are considered especially sensitive to ozone. But so are rugged athletes.

One or more common of the following conditions can make someone an ozone "sensitive", according to EPA's 1986 review of ozone standards:

* *pre-existing respiratory disease such as asthma, chronic obstructive lung disease, or allergies;*
* *heavy exercise during ozone exposure;*
* *exercise in high temperature and humidity during ozone exposure;*
* *predisposition to pulmonary infection;*
* *pre-existing disease or nutritional deficiency;*
* *prior infection or immunological problem;*
* *prior exposure to pollutant or respiratory irritant; and*
* *genetic variability in the population*

(Studies have shown that a certain percentage of "sensitives" are otherwise healthy adults and children, who for as yet unexplained reasons experience significantly greater-than-average lung function response to ozone.)

EPA also concluded that other possible factors- age, sex, nutrition and smoking status- have not been adequately tested. Still, the finding that growing lungs may be more sensitive to ozone indicates that age is a factor. Most functions of the human lung are considered fully developed at about age 18.

Carbon Monoxide (CO) - *Carbon monoxide emissions in a confined area, like a closed garage, can kill. Death comes from heart failure or suffocation. Carbon monoxide replaces oxygen that reaches body cells to maintain life.*

Outdoor carbon monoxide levels are relatively low, but people with heart ailments (angina, peripheral vascular disease, and other types of cardiovascular disease) are still at risk from low-level exposure, according the EPA.

Also potentially sensitive are:

* *people with chronic respiratory disease such as bronchitis, emphysema or asthma*
* *the elderly*
* *fetuses and young infants*
* *people suffering from anemia and those with abnormal hemoglobin types that affect the oxygen-carrying capacity of the blood*

Low-level carbon monoxide exposure can also cause health damage when people take certain medications, drink alcoholic beverages, or are at high altitudes.

Fine Particles (PM_{10}) - *The EPA identifies the following groups as the most sensitive to effects of breathing fine particles in the outdoor air:*

* *people with influenza, chronic respiratory and cardiovascular diseases, and the elderly, any of whom may be at risk of worsening illness and premature death;*
* *people with bronchitis, who can expect aggravated symptoms; and*
* *children, who may experience decline in lung function.*

Other groups considered sensitive are smokers and people who cannot breathe well through their noses. Exercising athletes may be also considered sensitive, since many breathe through their mouth.

3. OTHER DAMAGE CAUSED BY AIR POLLUTION

In addition to health effects, air pollution has other quantifiable and unquantifiable costs to Southern California. Ozone and particulate matter cause measurable damage to painted wood, stucco and rubber products. Particulate matter also increases cleaning costs for both residences and industry. Ozone, particulate matter, sulfur dioxide, and nitrogen oxides all increase the corrosion of steel and iron, the erosion of cement, marble, brick, tile, glass, and the fading of fabric. The commercial nursery stock grown in Southern California is adversely affected by ozone, as is livestock. Agricultural damage by air pollution can also be quantified for grapes, oranges, lemons, limes, beans, corn, melons, potatoes, spinach, tomatoes, turnips, cotton, grass hay, alfalfa, wheat, avocadoes, and grapefruits. Finally, the quality of life is adversely affected by reduced visibility of the surrounding mountains and oceans.

4. FEDERAL & STATE CLEAN AIR STANDARDS

Clean air standards have been established by both the Federal and State governments. These standards have been established to protect human health. At the present time, the California clean air standards are more stringent than federal clean air standards, as the state has set a policy to protect the health of people more sensitive to air pollution. Air quality standards have changed over time as more information has become available on the health effects of different pollution levels. Table 2 summarizes the maximum levels of criteria pollutants which meet federal and state clean air standards. The pollutants are either measured in parts-per-million (ppm) or micrograms per cubic meter (ug/m3). The concentrations are then averaged for periods ranging between one hour and one year, depending upon whether short-term exposures or long-term exposures have health effects. Some pollutants have both short-term and long-term exposure standards.

5. AIR MONITORING STATIONS NEAR GLENDALE

The South Coast Air Quality Management District monitors pollution at 39 stations within 37 monitoring areas of the South Coast Air Basin and South East Desert Air Basin. The City of Glendale is located within three monitoring areas as shown in Figure 4. The southern, central and western portions of the City are in the East San Fernando Valley monitoring area, which has a monitoring station in Burbank. The Glenoaks Canyon, Chevy Chase Canyon, Verdugo Woodlands, and La Crescenta-Montrose portions of the City are in the West San Gabriel Valley monitoring area, which has a monitoring station in Pasadena. Most of the Deukmejian Wilderness Park is in the San Gabriel Mountains monitoring area, which has no monitoring station. The Burbank and Pasadena stations provide a best picture of air quality in Glendale.

6. AIR QUALITY TRENDS IN GLENDALE

1992 (latest year for which figures are available) showed overall the cleanest air monitored at the Burbank and Pasadena monitoring stations since monitoring began. However, the air continued to exceed federal and state standards for ozone, carbon monoxide, and fine particle matter.

Ozone (O_3)

Ozone levels are typically the highest in the Glendale area between May and September. Ozone is measured for short-term (1-hour) concentrations. Figure 5 shows the maximum 1-hour concentrations of ozone reported between 1974 and 1992. Glendale has not had a Stage 2 smog episode since 1985, although such high concentrations of ozone used to occur commonly during the summer. Figure 6 shows the number of days between 1974 and 1992 at the Burbank and Pasadena monitoring stations which exceeded federal clean air standards for ozone. In 1992, the Burbank station reported 47 days in which the federal ozone standard was exceeded; the stricter state ozone standard was exceeded at this station on 115 days, approximately one-third of the year. The same year showed the air at the Pasadena monitoring station exceeding the federal and state clean air standards on 71 and 128 days, respectively.

Carbon Monoxide (CO)

Carbon monoxide levels, most concentrated during the winter months around freeways and major streets, have shown a sharp decline in the Glendale area in recent years, due primarily to emission control equipment on automobiles. Carbon monoxide is measured both for short term (1-hour) concentrations, as well as slightly-longer term (8-hour) concentrations. Figure 7 shows the maximum 1-hour concentrations from 1974 to 1992. Federal 1-hour standards have not been exceeded since 1976, and State 1-hour standards have not been exceeded since 1989 in the Glendale area. Exceedances of stricter eight-hour carbon monoxide standards are shown in Figure 8. The Burbank monitoring station reported 3 days which exceeded federal eight-hour carbon monoxide standards and 4 days which exceeded California eight-hour carbon monoxide standards in 1992. The Pasadena monitoring station reported no exceedances for the same year. The entire basin is expected to comply with federal CO standards by the year 2000.

TABLE 2 - AIR QUALITY STANDARDS

AIR POLLUTANT	STATE STANDARD CONCENTRATION/ AVERAGING TIME	FEDERAL STANDARD CONCENTRATION/ AVERAGING TIME	HUMAN HEALTH AND OTHER IMPACTS
Ozone	0.09 ppm, 1hr avg >	0.12 ppm, 1 hr avg	(a) Short term exposures: 1. Pulmonary function decrements and localized lung edema in humans and animals. 2. Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8 hr avg > 20 ppm, 1 hr avg >	9 ppm, 8 hr avg 35 ppm, 1 hr avg	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.25 ppm, 1 hr avg >	0.053 ppm, annual avg	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0.05 ppm, 24 hr avg > = with ozone >= 0.10 ppm, 1 hr avg or TSP >=100 ug/m3, 24 hr avg 0.25 ppm, 1 hr avg >	0.03 ppm, annual avg 0.14 ppm, 24 hr avg	Bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM10)	30 ug/m3, ann geometric mean > 50 ug/m3, 24 hr avg >	50 ug/m3, annual arithmetic mean 150 ug/m3 24 hr avg	(a) Prevention of excess deaths from short-term exposures and of exarcebation of symptoms in sensitive patients with respiratory disease; (b) Prevention of excess seasonal declines in pulmonary function, especially in children
Sulfates	25 ug/m3, 24 hr avg >=		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 ug/m3, 30 day avg >=	1.5 ug/m3, calendar quarter	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility Reducing Particles	In sufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70%, 8 hour avg (9a - 5p)		Visibility impairment on days when relative humidity is less than 70 percent

ppm: part per million - ug/m3: micrograms per cubic meter
Source: SCAQMD: 1991 Air Quality Management Plan

Figure 4: SCAQMD Monitoring Areas for Glendale

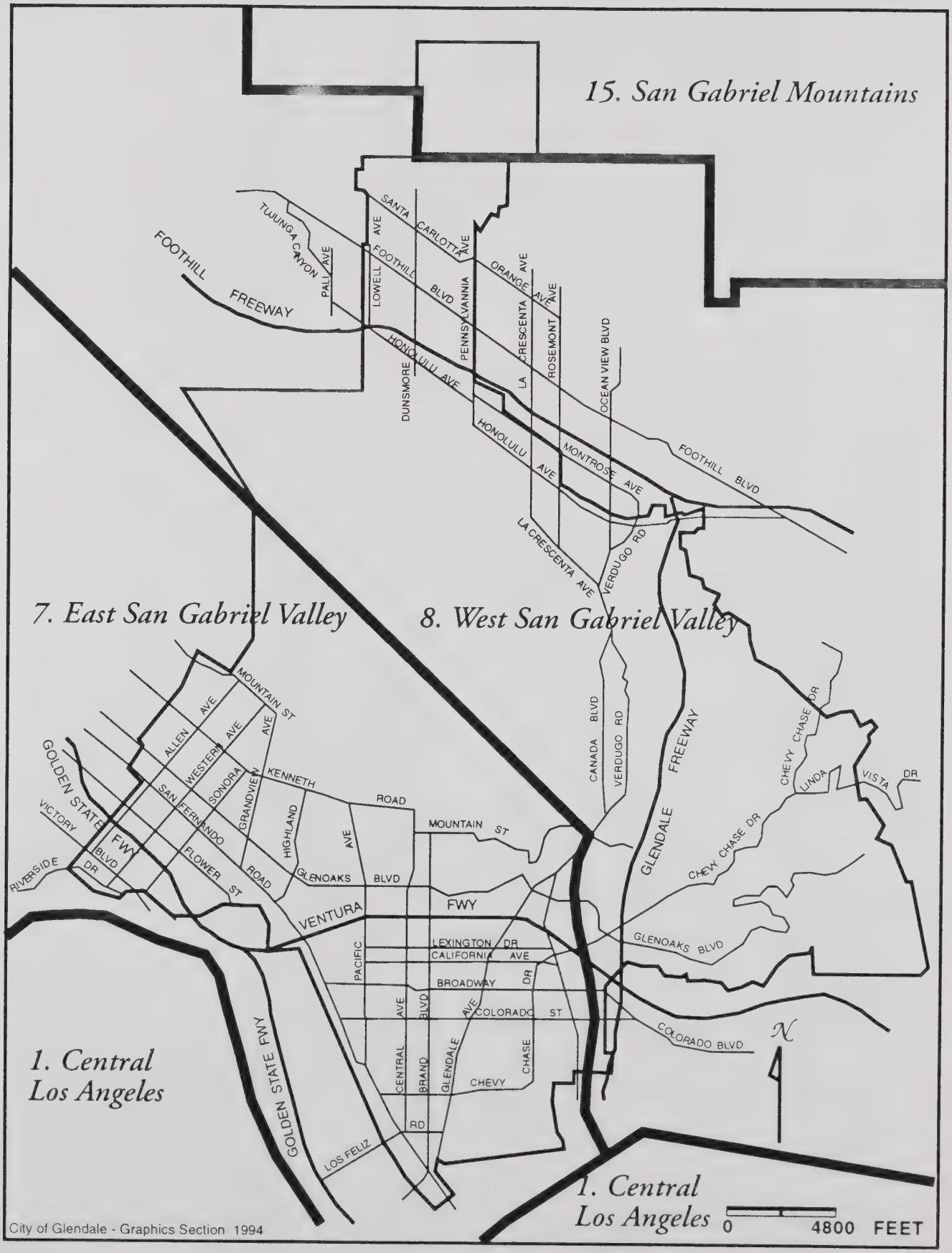
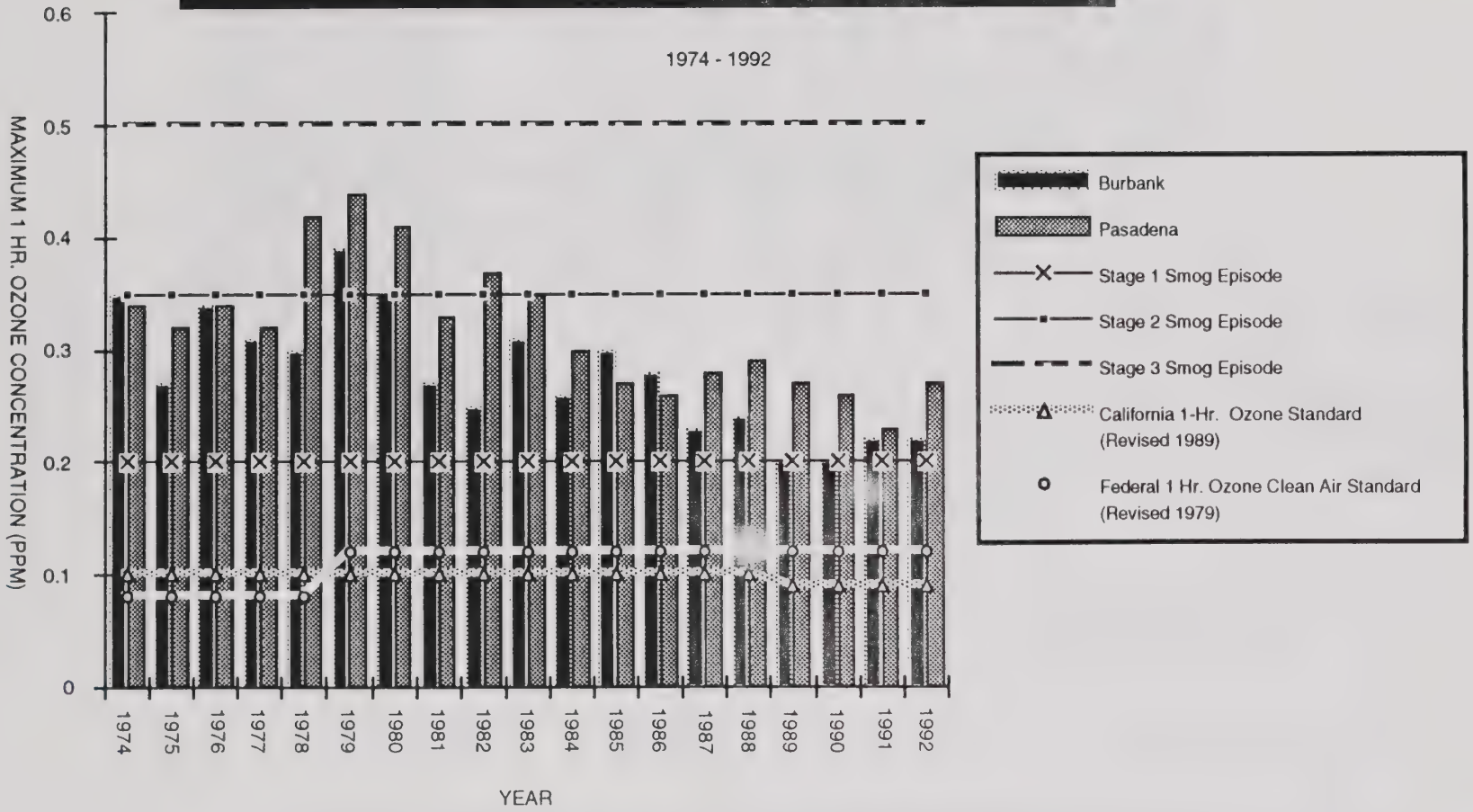
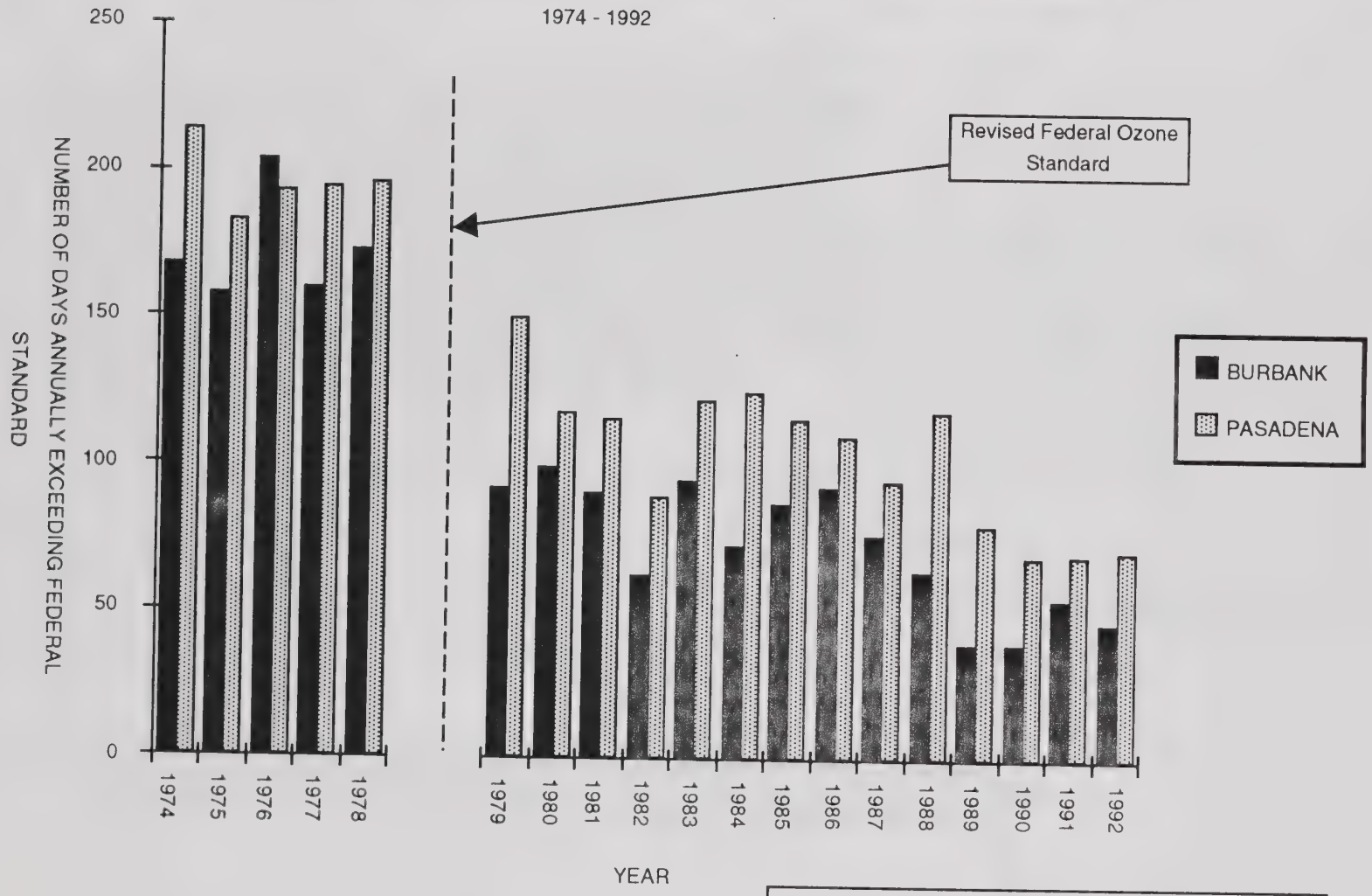


FIGURE 5: SHORT TERM (1HR.) MAXIMUM OZONE CONCENTRATIONS



Source: Los Angeles Co. APCD, South Coast AQMD

FIGURE 6: ANNUAL NUMBER OF DAYS EXCEEDING FEDERAL OZONE STANDARD



Source: Los Angeles Co.APCD, South Coast AQMD

Federal 1 Hr. Ozone Clean Air Standard
1974-1978: .08ppm 1979-1992: .12ppm

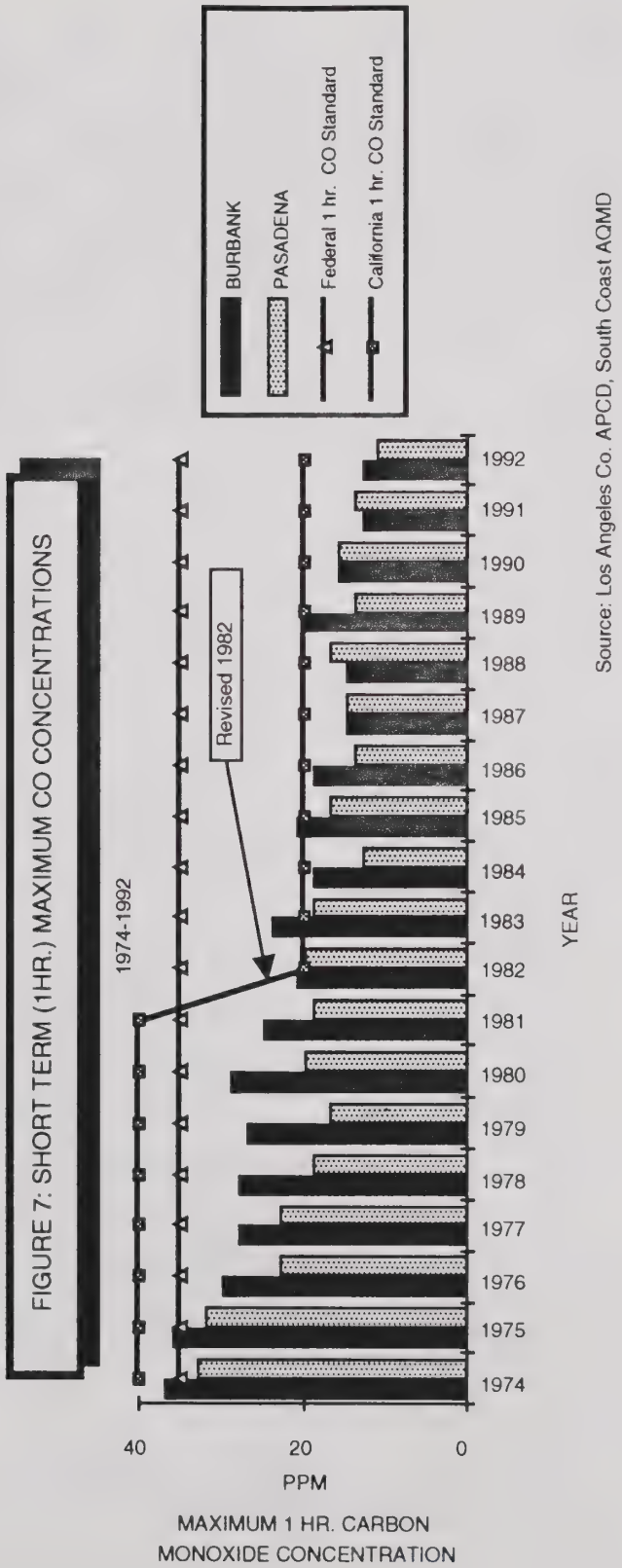
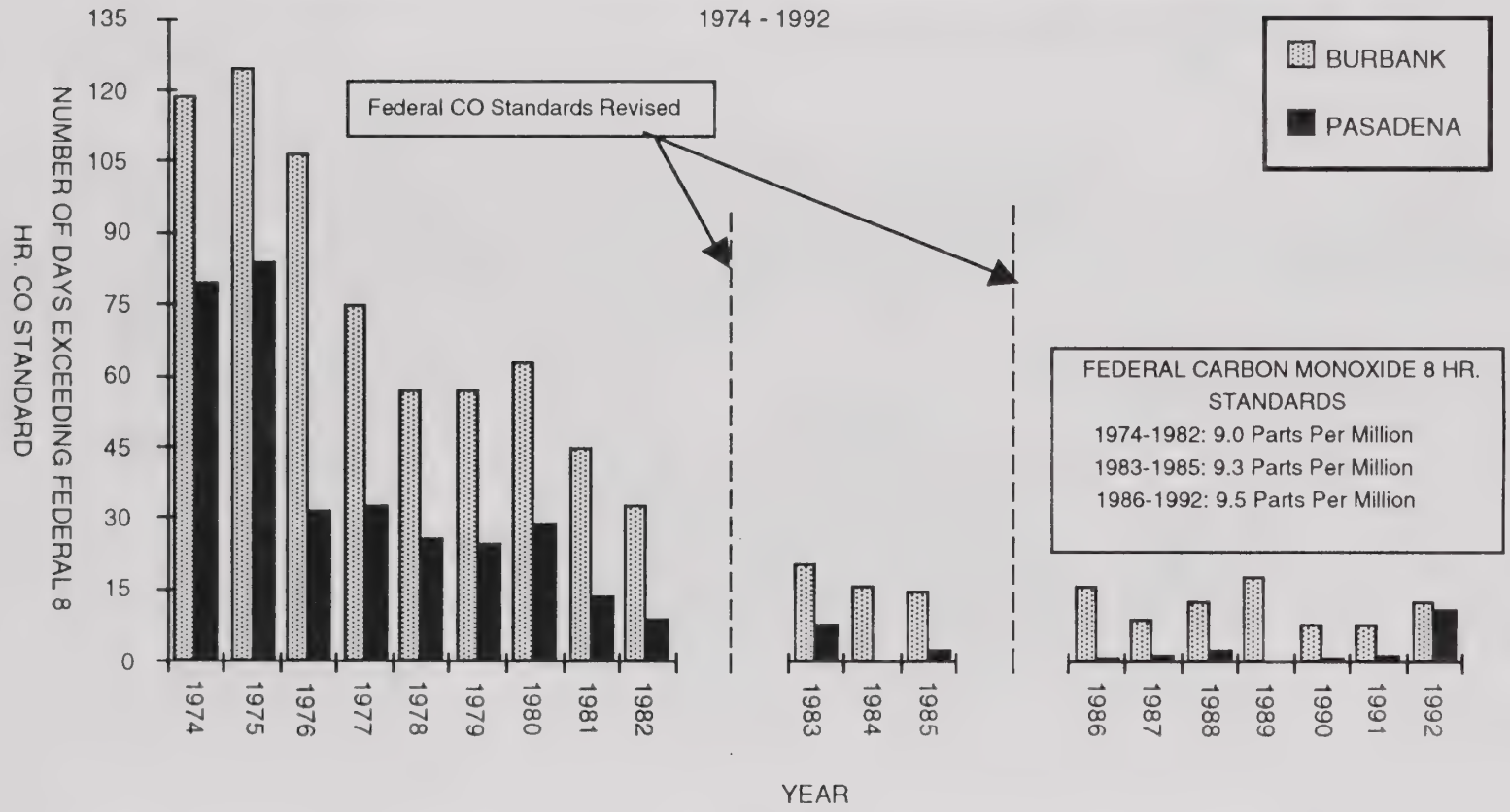

BURBANK
PASADENA
Federal 1 hr. CO Standard
California 1 hr. CO Standard
FIGURE 7: SHORT TERM (1HR.) MAXIMUM CO CONCENTRATIONS
1974-1992
Revised 1982
1992
1991
1990
1989
1988
1987
1986
1985
1984
1983
1982
1981
1980
1979
1978
1977
1976
1975
1974
YEAR
40
20
0
PPM
MAXIMUM 1 HR. CARBON MONOXIDE CONCENTRATION
Source: Los Angeles Co. APCD, South Coast AQMD

FIGURE 8: ANNUAL NUMBER OF DAYS EXCEEDING FEDERAL 8 HR. CARBON MONOXIDE STANDARD



Source: Los Angeles Co. APCD, South Coast AQMD

Nitrogen Dioxide (NO_2)

Nitrogen dioxide is measured for short-term (1-hour) concentrations as well as annual average concentrations. The Burbank and Pasadena monitoring stations have not shown an annual concentration exceeding federal clean air standards since 1986. State 1-hour concentrations of nitrogen dioxide were last exceeded in 1991. Figure 9 shows the downward trend of maximum 1-hour nitrogen dioxide concentrations between 1974 and 1992. The entire South Coast Air Basin complied with federal NO_2 standards for the first time in 1992. It was the last area in the United States to achieve compliance with this standard.

Sulfur Dioxide (SO_2)

Sulfur dioxide has historically been a problem only around the oil refineries in southern Los Angeles County. Federal and state standards have not been exceeded in the Glendale area since 1974, the year of data available to the Planning Division.

Fine Particles (PM_{10})

Fine particulate matter (PM_{10}) has been monitored only at the Burbank monitoring station, and has only been measured since 1985. PM_{10} is monitored for average daily concentrations and average annual concentrations. Average daily concentrations have exceeded California standards (50 micrograms per cubic meter) between 31 and 69 percent of the time in the years tested, but have less frequently exceeded federal daily concentration standards (150 micrograms per cubic meter). Average annual concentrations have always exceeded State standards (30 micrograms per cubic meter) and have sometimes exceeded federal standards (50 micrograms per cubic meter). No daily or annual trend can be determined from the limited available data. However, the Environmental Protection Agency has forecast a 95-percent probability that the South Coast Air Basin as a whole would be unable to consistently meet federal PM_{10} standards.

Lead

Prior to the availability of unleaded gasoline, lead levels in the Southern California atmosphere exceeded federal and California standards every day of the year. Exceedances recently are rare occurrences and only occur in the immediate vicinity of lead smelters when control equipment fails. Glendale has not had a problem with lead in the atmosphere in many years.

7. TOXIC AIR CONTAMINANTS

In addition to the criteria pollutants, a number of other pollutants can be hazardous to human health, often at much smaller concentrations than criteria pollutants. These pollutants are known as toxic air contaminants or "air toxics". Air toxics are identified by the risk of illness or death if inhaled. Air toxics could have either acute toxicity (increased risk of illness or death from a short-term exposure to a strong concentration), or chronic toxicity (increased risk of illness or death from a long-term exposure), or both. Often chronic toxicity involves carcinogenesis. Within the South Coast Air Basin, the increased lifetime risk of contracting cancer ranges from one chance in one thousand to one chance in one hundred, depending on the location, due solely to air toxics. As many as 200 cancers each year may result from air toxics, according to a 1987 study conducted by the SCAQMD entitled "The Magnitude of Ambient Air Toxic Impacts from Existing Sources in the South Coast Air Basin".

Of the many potentially carcinogenic air contaminants which have been identified by the State Air Resource Board (ARB), Benzene and Hexavalent Chromium appear to produce the greatest risk to Southern Californians. Benzene is primarily a tailpipe emission from gasoline engines. Hexavalent Chromium is emitted largely from plating industries, however, it is also emitted from chemical processes along with municipal waste and sewage sludge combustion.

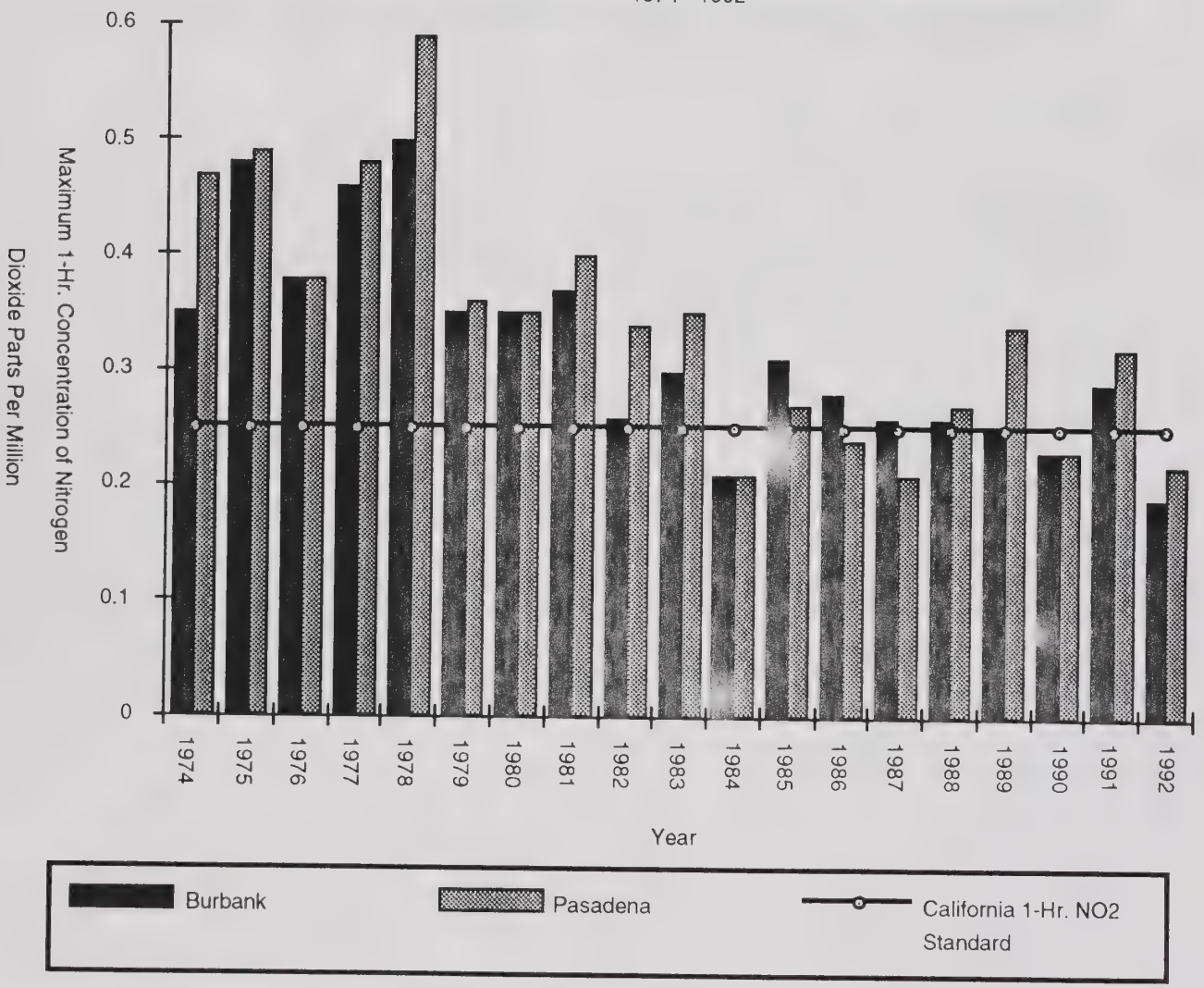
Toxic Air Contaminants are regulated by the federal and state governments. The SCAQMD has prepared a number of rules to implement these regulations. The following summarizes applicable federal and state policies:

* Federal Clean Air Act Amendments of 1990 - These recently adopted amendments call for maximum available control technology and residual risk evaluation and control for 189 identified hazardous air pollutants.

* California Toxic Air Contaminant Control Program (Tanner Toxics Act) - This program, added to the Health and Safety Code (Section 39650 et. seq.) calls for the ARB and Department of Health Services to identify and adopt control measures for air toxics. As of August 1993, 19 toxic air contaminants have been identified , most of which are heavy metals, asbestos, or industrial solvents. Control measures have been adopted for hexavalent chromium, benzene, ethyleneoxide, dioxin from hospital incinerators, heavy metals such as lead, cadmium, and mercury, and serpentine asbestos. These toxic air contaminants are listed in Table 3.

FIGURE 9: SHORT-TERM (1 HR.) MAXIMUM NO2 CONCENTRATIONS

1974 - 1992



Source: Los Angeles Co. APCD, South Coast AQMD

Table 3. Toxic Air Contaminants Regulated by the Air Resources Board

Toxic Emission	Representative Uses and Sources
Acetaldehyde	Combustion of fuel from mobile sources, agricultural burning, wildfires
Asbestos	Manufacturing of brakes, acoustic ceiling tiles, gaskets, brake shoe rebuilders and recyclers
Benzene	Constituent of gasoline; used in organic chemical manufacturing, pharmaceuticals, food processing
1, 3-Butadiene	Incomplete combustion of petroleum-derived fuels, petroleum refining, certain fumigant production and styrene-butadiene copolymer production
Cadmium	Secondary smelters; cement manufacturing plants; cadmium electroplating facilities; oil or coal burning; sewage sludge incinerators
Carbon Tetrachloride	Use of pesticides; production of fluorocarbon, chlorinated paraffin wax, and carbon tetrachloride
Chlorinated Dioxins Dibenzofurans	Manufacture of chemicals such as pesticides and wood preservatives; manufacture of and PCBs, solid waste incinerators
Chloroform	Manufacture of fluorocarbon 22 refrigerants and fluoropolymers; manufacture of pharmaceuticals, laboratory use; water chlorination (POTWs); air stripping towers, chemical manufacturing cooling towers; pulp bleaching in paper manufacturing
Chromium VI	Chrome plating, combustion of oil, coal, municipal waste and sewage sludge, used in production of chromium chemicals and paints
Ethylene Dibromide	Pesticide and solvent use; chemical feed stock for dye; manufacturing of pharmaceuticals
Ethylene Dichloride	Manufacture of vinyl chloride, solvents, paints, varnish, and finish removers; metal degreasing, soaps and scouring compound
Ethylene Oxide	Sterilization; fumigation; surfactant manufacturing; ethylene oxide distribution
Formaldehyde	Manufacture of resins, rubber and paper products, dyes, plastics and cosmetics; chemical sterilant, leather tanner, plating, preservative, embalming fluid and fumigant; fuel combustion
Inorganic Arsenic	Pesticide use; herbicide use, arsenic mining; cement, glass, and chemical manufacturing; agricultural burning; waste incineration; secondary lead smelting
Methylene Chloride	Food processing; manufacturing of paint removers, aerosols, degreasers, polyurethane foam, electronics, chemical, and pharmaceuticals
Trichlorethylene	Polyvinylchloride production; adhesive, painting and coating operation; refrigerant and heat exchange operations; solvent applications; land POTWs; ground aeration; air stripers
Nickel	Production of polyvinylchloride for plastic products, fabrication facilities; landfills; POTWs
Perchlorethylene	Dry Cleaning; degreasing, paint, coatings, adhesives, aerosols and chemical production; printing operations
Vinyl Chloride	Asbestos mining and milling; secondary smelting; solid waste and sewage sludge incineration; electroplating and electrical equipment manufacturing; cement manufacturing

Source: SCAQMD, CEQA Air Quality, Handbook, 1993

A revision to this program in 1993, required the ARB to identify the 189 hazardous air pollutants in the Federal Clean Air Act as toxic air contaminants.

* California Air Toxic Hot Spots Act - This act focuses on land uses as opposed to the Tanner Act which addresses specific chemicals. It requires local air districts to take toxic inventories from large facilities. It would then determine which facilities require full risk assessments. Facilities with identified significant toxic risks must notify neighbors and prepare a risk reduction plan. Currently, no local air districts have identified facilities which pose significant risks. This act is found in Section 44300 et. seq. of the Health and Safety Code.

* Toxic Emissions Near Schools - The California Health and Safety Code (Sections 42301.6 through 42301.9) requires new or modified sources of air contaminants within 1000 feet of school to notify parents before air pollution permits are granted. Risk management and prevention plans are required. Air pollution permits could be denied if seen as potentially harming students.

* Air Monitoring of Disposal Sites - The California Health and Safety Code (Section 41805.5) requires monitoring of active and inactive disposal sites for air contaminants, with remedial action if a health risk is determined.

* District Rules - The SCAQMD presently has rules to reduce emissions of chromium, benzene, asbestos, ethylene oxide, hydrogen fluoride, and dioxin. In addition, Rule 1401 requires risk assessment for over 40 carcinogenic contaminants. A broader rule (1402) is being developed to implement federal and state air toxics regulations.

C. MAJOR EMISSION SOURCES IN GLENDALE

1. STATIONARY SOURCES

Stationary sources of air pollution are defined to include industrial processes, chemical processes, and fuel combustion which emit measurable amounts of pollutants from a fixed location. Stationary sources also include area sources, which involve a large number of small emission sources (i.e. residential water heaters) or sources where the exact emission source is not always evident (i.e. wind blown dust). The following section describes both public and private stationary sources within Glendale.

Grayson Power Plant

The City of Glendale is currently implementing nitrogen oxide (NO_x) reduction programs in its Grayson Power Plant, in compliance with the South Coast Air Quality Management District (SCAQMD) rules and regulations. In 1989, SCAQMD adopted stringent power plant NO_x reduction regulations known as Rules 1134 and 1135. Rule 1134 requires reductions of NO_x emissions by December, 1995 from gas turbines that are operated more than 200 hours per year. Rule 1135 mandates NO_x reductions in boilers in three phases over a 10-year period until December, 1999. This rule requires a system-average emission rate limit in parts per million (ppm) or a daily emissions cap in pounds per day, and an annual emissions cap in tons per year. Additionally, a continuous emissions monitoring system is required to forward the emissions data to SCAQMD.

The compliance plan for Rule 1134 has been approved by the SCAQMD. The Rule 1134 Plan includes the installation of NO_x selective catalytic reduction (SCR) units on the combined cycle gas turbine units 8A and 8B/C. Beyond the NO_x SCR, the City plans to install concurrently carbon monoxide (CO) SCR technology. Units No. 6 and 7 are simple cycle gas turbines that are planned to operate less than 200 hours/year, thus will not be retrofitted with NO_x reduction equipment.

Glendale has recently awarded the contracting to retrofit Grayson Power Plant Boiler Units 3 and 4 with low NO_x burners that will be capable of burning natural gas, fuel oil and landfill gas. It is anticipated that landfill gas will be available from the Scholl Canyon Landfill by mid-1994. In 1996, plans call for SCR installation in the ductwork on Grayson No. 5 and this will be supplemented with SCR in the air preheater in 1999.

The continuous emissions monitoring equipment, including the Remote Control Terminal Units (RTU's) for the boilers, are currently undergoing certification tests. This monitoring equipment is subject to re-certification testing at each reduction level mandated by SCAQMD.

Among other regulations, the Power Plant must comply with the Air Toxics "Hot Spots" Information and Assessment Act of 1987. This program requires Glendale, in the operation of its Grayson Power Plant, to prepare a site-specific air toxic emissions inventory plan (ATIP) which details the methods to be used in assessing the emissions from the facility, an air toxics inventory report (ATIR) which describes the results of the inventory and a health risk assessment (HRA) based on those results. The health risk assessment considers both cancer and non-cancer risks.

Glendale hired WARZYN, Inc. to conduct the health risk assessment which concluded that the risks are insignificant:

"The estimated health risk associated with emissions from the City of Glendale power plant is small despite the use of conservative, worst-case assumptions in the calculations as required by the AB2588 Risk Assessment Guidelines. Neither the chronic nor the acute hazard indices exceed 0.5 at any location outside of the facility boundary."

Scholl Canyon and Brand Park Landfills

The Brand Park Landfill is owned and operated by the City of Glendale Public Works Division. It accepts only inert materials such as clean dirt or landscaping waste. The Scholl Canyon Landfill is owned jointly by the City of Glendale and Los Angeles County Sanitation District and operated by the Los Angeles County Sanitation District. Both the active landfill and inactive landfill at Scholl Canyon generate significant amounts of methane gas as a by-product of municipal refuse decomposition. Two SCAQMD rules, 1150.1 and 1150.2, have been developed to reduce landfill gas emissions. In general, average organic gas concentrations on the landfill surface can not exceed 50 parts per million for both active and inactive landfills. The City and Sanitation District are currently collecting the methane gas through a subsurface pipe system. It is then burned in a flaring system to reduce its volatility. However, by about mid-1994, it is expected that this methane gas will be piped to the Grayson Power Plant and burned in Units 3 or 4. This would eliminate flaring emissions and reduce power plant emissions at the same time.

Industries Regulated by the S.C.A.Q.M.D.

The South Coast Air Quality Management District is the primary agency which is responsible for regulating stationary sources in Southern California. Historically the City of Glendale has never been known for "smokestack" industries. The industrial zones within the City do not permit uses such as steel mills, oil refineries, or other high polluting industries, due primarily to the close proximity of schools and residences.

However, in order to reduce emissions to the point of achieving federal clean air standards, the SCAQMD has had to adopt emission-reducing measures for almost all industries, and even some commercial uses, such as dry cleaners, charbroilers, and large office buildings. State law has mandated that the City not issue final use and occupancy permits until an applicant has met, or is meeting SCAQMD requirements. The following twelve questions are asked of a use and occupancy permit applicant to determine if an SCAQMD permit may be applicable to the proposed use. An affirmative response to any of the twelve questions would require clearance from the SCAQMD prior to City issuance of a Certificate of Use and Occupancy.

1. Does your facility use and internal combustion engines greater than 50 BHP?
2. Does your facility involve mixing, blending or processing any solvents, adhesives, paints or coatings?
3. Does your facility create any dust or smoke?
4. Does your facility refine any liquids or solids?
5. Does your facility plate or coat any materials?
6. Does your facility have any combustion equipment, (i.e., boiler, furnaces, broiler, baking ovens, etc.) rated greater than 2,000,000 Btu/hr?
7. Does your facility handle or store solvents or motor fuel?
8. Does your facilty use or store any acids?
9. Does your facility use any chemical processes?
10. Does your facility use solvents for clean up?
11. Is your facility a dry cleaner, restaurant with a charbroiler, automotive body shop, gasoline service station, printer, or parts coater?
12. Is the subject building located within one thousand (1,000) feet of any school? (Building Location to School Property Line. Grades K-12.)

2. MOBILE SOURCES

Vehicle trips account for the majority of air pollution emitted in Glendale. The Los Angeles County Metropolitan Transportation Authority has estimated that land uses within Glendale generate about 436,000 vehicle trips daily. These vehicle trips result in the emissions of about 42.5 tons of carbon monoxide, 5.2 tons of reactive organic gases, and 3.6 tons nitrogen oxides each day. These emissions are summarized in Table 4. The City of Glendale and businesses in Glendale have worked together to reduce the number of vehicle trips generated by Glendale land uses. The programs in place have been designed to reduce congestion, to improve air quality, to provide public transportation to those without cars, and to comply with regulations at other levels of government. These programs are described in the following section of the Air Quality Element.

Table 4: Daily Vehicle Trip Emissions in Glendale

Daily Vehicle Emissions Within Glendale City Limits
1990
(tons per day)

	Number of Trips	Carbon Monoxide	Reactive Organic Gases	Nitrogen Oxides
Passenger Vehicles	392,400	37.3	4.5	2.4
Trucks	43,600	5.2	0.7	1.2
TOTAL	436,000	42.5	5.2	3.6

Sources: LACMTA: TDM Phase II Background Report
SCAQMD: CEQA Air Quality Handbook Appendix 9, Published 1993
SCAG: Tri-City Trip Length Survey

The Air Quality Plan

A. GOALS AND POLICY OBJECTIVES

As indicated in the beginning of this element, the primary purpose of an air quality element is to identify ways in which Glendale can efficiently and equitably reduce its contribution to regional emissions, and thus provide a more healthful environment for all of its residents. The following goals identified indicate a desired future. The policy objectives direct the programs to achieve these goals.

Goal 1

Air quality will be healthful for all residents of Glendale.

Policy Objectives

a. Reduce Glendale's contribution to regional emissions in a manner both efficient and equitable to residents and businesses, since emissions generated within Glendale affect regional air quality.

b. Encourage and support other jurisdictions in reducing their contributions to regional emissions, since Glendale's air quality is strongly affected by emissions generated throughout the South Coast Air Basin.

c. Comply with the Air Quality Management Plan prepared by the South Coast Air Quality Management District and Southern California Association of Governments.

Goal 2

Residents, businesses, and government will increase their awareness of the linkages between behavior and air pollution.

Policy Objectives

a. Regularly provide information on air quality and methods to reduce air pollution to Glendale's residents and businesses

b. Work with schools and businesses on a public education program on air pollution.

c. Keep informed on new research on air pollution and air pollution control technologies.

Goal 3

Air emissions from City operations will be minimized, while meeting public service requirements.

Policy Objectives

a. Continue the aggressive programs of recycling, energy conservation, and hazardous waste collection in order to minimize emissions from the Grayson power plant and Scholl Canyon landfill.

b. Operate the power plant in a manner to minimize emissions and comply with various rules of the South Coast Air Quality Management District, while still providing needed electricity to residents and businesses.

c. Work with the Los Angeles County Sanitation District and the SCAQMD monitoring staff to minimize emissions at the Scholl Canyon landfill.

d. Reduce mobile source emissions from City employees commuting as well as driving for work-related purposes.

e. Provide leadership as a City by utilizing and advancing innovative technology to reduce air emissions.

Goal 4
The reliance on automobile transportation will be reduced.

Policy Objectives
a. Coordinate land-use planning with existing and planned transportation systems to encourage the use of public transportation systems and non-polluting transportation in future development.
b. Promote the use of public transportation and non-polluting transportation in standards for new construction.
c. Expand existing public transportation and non-polluting transportation systems and develop new systems in order to reach a greater number of potential users. Continue to seek federal, state, and regional funding sources.
d. Coordinate various transportation modes with transfer facilities to increase convenience.
e. Coordinate non-automobile transportation systems with surrounding jurisdictions.
f. Increase carpooling opportunities in Glendale.
g. Develop incentives for businesses with fewer than 100 employees to reduce vehicle trips. These businesses are not regulated by Rule 1501, but account for the majority of Glendale's work force.

Goal 5
Air quality programs will assist businesses in Glendale.

Policy Objectives
a. Inform the businesses of Glendale on ways to reduce air pollution, both directly, as well as by reducing waste, minimizing energy usage, reducing vehicle trips, and managing truck delivery schedules and routes.
b. Provide incentives for existing and new businesses in Glendale to reduce both stationary and mobile emissions.
c. Assist businesses, schools, and colleges in reducing vehicle trips by using City-operated services and facilities.
d. Continue and expand public/private partnerships which reduce air pollution.
e. Support the use of new air pollution control technologies by Glendale's business community.
f. Assist the business community with environmental regulations through improved communication and technical assistance.

B. EXISTING PROGRAMS AND SERVICES IN GLENDALE WHICH REDUCE AIR EMISSIONS

1. **Beeline Shuttle** - The City of Glendale currently operates 18 propane-fueled buses on 5 separate routes to serve the Glendale Transportation Center, downtown Glendale, east Glendale including the Glendale Adventist Medical Center, Glendale College, and the Montrose area. Currently, the Beeline system carries 3,500 riders each day. Ridership is expected to rise dramatically since three of the five routes have just begun service in November 1993. The City is planning to convert two of the buses to burn compressed natural gas, which burns cleaner than propane.

2. **Metrolink Express Shuttle** - In addition to the regular Beeline service, the City operates express routes which connect both the San Fernando Road corridor and the Civic Center to the Metrolink commuter train service at the Glendale Transportation Center. This service is free to all passengers, and currently averages 75 users per day.

3. **San Fernando Road/Fairmont Avenue Park and Ride Facility** - A park-and-ride facility with approximately 180 spaces is currently being developed by the City with cooperation from Southern California Gas Company who owns the land. The site is at the junction of the Golden State and Ventura Freeways. It is expected to be fully utilized soon after completion. The site is also connected to a compressed natural gas fueling station under development and will serve as parking for a planned light-rail station.

4. **Glendale Transportation Center** - The City has purchased the historic Southern Pacific Railroad Depot and surrounding properties for the development of a multimodal transportation center. The center currently is served by Beeline buses, Metrolink trains and Metrolink Express Shuttles, taxis, and surface parking for automobiles. It is a planned Light Rail station for the Burbank-Glendale-Los Angeles Light Rail Light Rail Project undertaken by the LACMTA.

5. **Transportation Demand Management Program** - On March 2, 1993, the City Council adopted a Transportation Demand Management (TDM) Ordinance. This ordinance requires new non-residential development of 25,000 square feet or more to provide ridesharing information to its occupants. New development of 50,000 square feet or more requires preferential parking for carpools and vanpools and bicycle parking in addition to ridesharing information. New non-residential development of 100,000 square feet also requires vanpool/carpool pick-up and drop-off areas, as well as additional bicycle and pedestrian amenities.

6. **Glendale Transportation Management Association (GTMA)** - The GTMA was formed in 1989 to support efforts in the Glendale Community to encourage alternatives to solo commuting. The efforts of the GTMA im-

prove accessibility and mobility by generating and supporting creative, cost-effective transportation demand management programs and services. Over 17,000 employees in Glendale work for companies who are members of the GTMA. Most member firms use the services of the GTMA to develop SCAQMD Rule 1501 (previously known as Regulation XV) compliance programs. The GTMA also has an outreach program recently developed to encourage membership by firms with fewer than 100 employees, firms not regulated by Rule 1501. The GTMA offers services to educate and assist employees in finding options other than solo commuting, a guaranteed ride home program, and transportation information centers at major employment sites which inform employees about transportation and air quality issues.

7. **City Employee Ridesharing Program** - As part of the City's compliance plan with Rule 1501 of the SCAQMD, Glendale has adopted a number of measures to reduce both commuting and work-related trips. Financial incentives are given to employees who walk, ride their bicycle, carpool, vanpool, or take a bus to work. In addition, bicycle racks and lockers have been installed at several work locations. Most non-emergency City employees now work a 9-80 schedule, where 80 hours of work are completed in 9 days instead of 10, eliminating 10% of commuting trips.

8. **City Employee Telecommuting Program** - The City offers telecommuting to all employees whose job duties lend themselves to working at home or at a satellite work center.

9. **Support of "off-site" parking with shuttle buses for downtown Glendale businesses** - The City and Redevelopment Agency have reviewed and approved development plans for large office buildings and 400 North Brand Boulevard and at 655 North Central Avenue, where some of the required parking is provided in a less-congested area. Employees are then shuttled to the building site. This measure reduces congestion, which in turn reduces high emissions from automobile idling and stop-and-go driving.

10. **Citywide Traffic Signal Synchronization Program** - At the present time, Glendale has about 210 signalized intersections. Of these, 20 intersection signals are controlled by Caltrans at freeway ramps. The City has developed an extensive underground interconnect system. Most major arterials in the downtown area already use interconnected signal timing. Others, such as signals in San Fernando Road, Los Feliz Road, Glendale Avenue, Canada Boulevard, Verdugo Road, and Foothill Boulevard are individually coordinated. Foothill Boulevard and Glenoaks Boulevard are part of a countywide coordination project. The City is currently completing two major traffic signal projects involving equipment upgrades and protected-permissive left turn phasing at 65 locations. In addition the City has been participating in the Fuel-Efficient Traffic Signal Management (FETSIM) program, which, in two years, involves the retiming of 90 traffic signals. These programs reduce congestion, idling time, and stop-and-go driving, which decrease emissions from driving.

11. **Smart Corridor Program** - The cities of Burbank, Glendale, and Pasadena have received $3.7 million from the LACMTA to develop a "smart corridor" along San Fernando Road (Paralleling Interstate 5) and Colorado Street (paralleling State Highway 134). As part of this project, the City will upgrade signals along these routes and develop a centralized control center. This highly sophisticated traffic control system would connect the signals along these routes to the City of Pasadena Traffic Management Center, City of Los Angeles ATSAC, and Caltrans Traffic Management Center. The coordination of parallel surface streets with freeways will help relieve congestion and reduce vehicle emissions.

12. **Alternative Fuel Vehicle Purchasing Program** - The City has developed a policy to purchase vehicles which burn fuels that produce lower emissions than gasoline where possible. The City's fleet includes methanol vehicles, flexible-fuel (methanol and gasoline) vehicles, and propane vehicles. The City is currently purchasing or retrofitting existing vehicles to add Compressed Natural Gas and electric vehicles to its fleet.

13. **Development of Compressed Natural Gas Fueling Station** - Southern California Gas Company and the City of Glendale have been working together to construct an automated self-service fueling station for compressed natural gas at the corner of San Fernando Road and Fairmount Avenue. This station will be open by 1994, and should encourage the purchase of CNG vehicles by individuals and businesses. CNG vehicles produce much fewer emissions than the cleanest gasoline vehicles available today.

14. **Methanol Fueling Station** - The City Public Works Division maintains an underground tank at its maintenance facility at 541 West Chevy Chase Drive for methanol storage for City vehicles. It is currently filled with pure methanol, which can be used in dedicated vehicles or blended with unleaded gasoline for use in flexible-fuel vehicles. The Fire Division also maintains a methanol fuel tank at its maintenance facility at Fire Station 22.

15. **Participation in the Arroyo Verdugo Transportation Coalition (AVTC)** - The AVTC (formerly Tri-Cities

Transportation Coalition) is a group of leaders from the chambers of commerce, city councils, and communities of Burbank, Glendale, Pasadena, LaCanada Flintridge, and South Pasadena. The group was formed to address transportation and other related needs among the five cities. The group currently is investigating the local transit services, private employer trip reduction strategies, an east-west rail system along State Highway 134, Dial-A-Ride coordination and other issues.

16. **Applications for Federal, State, and Regional Grants which Facilitate Trip Reductions** - The City of Glendale aggressively pursues all types of grants to reduce congestion and reduce the dependence on the automobile for transportation. Sources of funding obtained by the City include the federal Intermodal Surface Transportation Efficiency Act (ISTEA), SCAQMD Vehicle Registration Fees (AB 2766), LACMTA Congestion Management Program (Proposition III), LACMTA Sales Tax funds (Proposition A & C), special grants from Caltrans through the State Transportation Improvement Program (STIP), and other sources.

17. **Dedication of local Proposition "A" and "C" funds to Burbank-Glendale-Los Angeles Light Rail Project** - In 1980, voters in Los Angeles County approved Proposition A, a 1/2 percent additional sales tax for the improvement of transportation. In 1990, Proposition C was approved by voters increasing the sales tax an additional 1/2 percent for transportation improvements. A portion of this sales tax is returned to each locality where the money is collected. The money has been used to fund the Beeline, Dial-A-Ride and other local programs. The City has also saved a substantial portion of this fund to help pay for the Burbank-Glendale-Los Angeles Light Rail Project when it is developed. This funding source has already been used to help pay for the Glendale Transportation Center, a major transfer facility for the light rail project.

18. **Installation of Additional Emission Control Equipment at Grayson Power Plant** - As described earlier, the Public Service Division has committed itself to major improvements to the City's power plant in order to reduce NO_x and CO emissions and comply with SCAQMD Rules 1134 and 1135.

19. **Installation of Landfill Gas Pipeline from Scholl Canyon to Grayson Power Plant** - The installation of this landfill gas pipeline will reduce the need to "flare" methane emissions from the Scholl Canyon active and inactive landfill sites. Landfill gas also burns cleaner than natural gas due to its lower fuel and higher carbon dioxide content. This pipeline, scheduled to operate beginning in 1994, will reduce emissions at the City`s landfill, as well as at the City`s power plant.

20. **Management of Landfill Gas System at Scholl Canyon** - The City recently replaced the landfill gas pickup system at the Scholl Canyon inactive landfill. The new pickup system and cover were designed to minimize leaks of landfill gas into the atmosphere. The City is regularly inspecting this new pickup system to ensure that it is functioning properly.

21. **Recycling Collection Program** - The City currently operates a curbside recyclable collection program for both residential and non-residential uses. In addition, recycling bins are located for public use at several locations in the City. The recycling of materials reduces energy and raw product processing emissions as well as landfill emissions.

22. **Recycling Buy-Back Center** - In order to further opportunities for recycling by Glendale residents and businesses, the City opened a buy-back center at 800 Flower Street. Those who bring their recyclables to this center receive competitive prices for glass, aluminimum, plastic, and other recyclable materials.

23. **Household and Small Business Hazardous Waste Collection** - The Environmental Management Center (EMC) at 780 Flower Street is the first permanent site for household and small business hazardous waste collection in Los Angeles County. Once a month, residents and businesses in Glendale can bring materials which do not belong in the municipal waste stream to this facility. This reduces the possible release of hazardous emissions into the air. The EMC received a Model Community Achievement award from the SCAQMD in 1993.

24. **Hazardous Material Incident Response Program** - The Fire Division operates its own hazardous materials incident response unit 24 hours a day from Station 27 at 1127 Western Avenue. Its location is close to most of Glendale's industry, providing quick response to accidental toxic air releases and other hazardous material incidents.

25. **Electricity and Water Conservation Program** - Glendale's Conservation office has several on-going programs to assist utility customers in determining ways to reduce water and energy usage. These programs include surveys for conservation potential, high bill assistance, speakers and other educational programs, low-flow showerhead sales, air-conditioning load control, and others. These water and energy conservation programs not only reduce a customer's utility bill, they also aid in re-

ducing water pumping, treatment, and other energy needs, thereby reducing air emissions associated with energy production.

26. **Use of Consumer Technology Applications Center (CTAC)** - Southern California Edison (SCE) developed CTAC in Irwindale as a large energy-efficiency demonstration center to help residents, builders, and businesses which use SCE reduce their energy costs. City of Glendale utility customers are also able to use the center for ideas on how to reduce their energy needs.

27. **Energy Demand Management Program** - The City has contracted a study to research the feasibility of various demand-size energy management programs. The size of a power plant is generally determined not by the average energy needs, but rather by peak energy needs. Reducing peak energy needs reduces the need for power plant expansion.

28. **Grading Dust Suppression** - In order to minimize dust from grading operations and comply with SCAQMD Rule 403, the Public Works Division requires regular watering of grading sites and prohibits grading on windy days. Rapid revegetation of graded slopes is also required.

29. **Tenant Improvement SCAQMD Permitting Checklist** - Any building permit application where tenant improvements are proposed requires the submittal of an SCAQMD questionnaire by the applicant. This questionnaire lists items which may require an SCAQMD permit. If a permit is deemed necessary, occupancy permits would require SCAQMD clearance. This ensures that new businesses which require building permits from the City also obtain SCAQMD permits as necessary.

30. **LNX Program** - The Library Division developed LNX Systems as an interactive electronic public information project. Its ultimate goal is to connect home and business computers, city government offices, community college, libraries, public schools, and interactive public computer kiosks. Services now available include electronic mail, community bulletin boards and calendars, conferencing, electronic news and yellow pages, recreation class schedules, restaurant and entertainment guides, City notices, announcements, agendas, job listings, club and organization, listing, and an interface to the library catalog. As additional services are added to LNX, the number of vehicle trips can be greatly reduced.

31. **Hillside Development Program** - In 1993, the City adopted new development standards for hillside subdivisions. These new standards decreased the buildout potential of Glendale's hillsides, which, due to their steepness and low density, are not served by public transportation and are very dependent on the the automobile. Housing demand could be absorbed with fewer environmental consequences in the multiple dwelling zones, where the automobile is not as much a necessity.

32. **Environmental Coordinating Committee** - Once a month, representatives from various divisions in the City meet to discuss and coordinate various environmental policies and programs. Among the policies developed by the committee are the Alternative Fuel Vehicle purchasing policy.

33. **Urban Hikeway Program** - In order to provide a tour of historic and cultural resources without the need for an automobile, the Planning Division developed the Urban Hikeway. The Urban Hikeway consists of three separate interconnected walking tours of downtown Glendale. Brochures with maps of the routes are available in the Planning Division office.

34. **Glendale Exchange Mixed-Use Project** - The Glendale Redevelopment Agency created this pedestrian-friendly project on Maryland Avenue between Wilson Avenue and Broadway. The project includes a mix of theaters, restaurants, stores, and offices. This reduces the need for multiple vehicle trips.

35. **Paved Roads and Parking Lots** - Section 26-300 et. seq. of the Glendale Municipal Code requires pavement of roads when building permits are requested. Section 30-3608 requires that any off-street parking areas also be paved. These requirements reduce the potential for dust emissions and are consistent with AQMP Control Measure 12a.

36. **Prohibition of Advertising Vehicles** - Section 27-34 of the Glendale Municipal Code prohibits moving or parking any vehicle used primarily for commercial advertising purposes on any street or alley at any time. This prohibition is consistent with the goal of AQMP Control Measure M-G-9.

C. NEW OR EXPANDED PROGRAMS

PROGRAM 1:COORDINATED STUDIES AND REVIEW OF MAJOR PROJECTS

Work to develop a standing subcommittee or agenda item at meetings of the West San Gabriel Valley Planning Council and/or Arroyo Verdugo Subregion, to review progress of individual jurisdictions' major development projects, traffic studies and areawide and regional transportation plans and facility development programs.

Responsible Agencies:

The West San Gabriel Planning Council and/or Arroyo Verdugo Subregion will be responsible for coordinating areawide surveys, studies, and transportation planning projects with the relevant agencies (LACMTA, SCAG, SCAQMD, Caltrans).

The West San Gabriel Valley Planning Council will establish a standing subcommittee or agenda item to review or discuss progress made by individual jurisdictions in transportation and air quality planning.

Related Policies and Programs:

Air Quality Element Policy Objectives 1a, 1b, and 4e

AQMP Control Measure 17: Growth Management, requires that cities amend general plans, adopt ordinances, and develop interregional agreements to attain management goals at the subregional level by ensuing development is consistent with subregional VT reductions or jobs/housing balance performance goals in the GMP.

West San Gabriel Valley Air Quality Plan Policies #1, 2, 3, 4.

LACMTA Congestion Management Program (CMP).
SCAG Regional Comprehensive Plan (RCP).

PROGRAM 2: COORDINATED POLICIES, REGULATIONS, AND TECHNOLOGIES

Ensure that new and innovative air quality policies, regulations, and technologies adopted by any jurisdiction are communicated to other jurisdictions through the West San Gabriel Valley Planning Council, and/or Arroyo Verdugo Subregion.

Responsible Agencies:

The Planning Division will keep abreast of air quality policy, regulations, and technological efforts conducted within Glendale. The representatives to the West San Gabriel Valley Planning Council and Arroyo Verdugo Subregion would report relevant information at meetings, and keep Council informed on the activities of other cities.

The West San Gabriel Valley Planning Council will establish a standing subcommittee or agenda item to review or discuss progress made by individual jurisdictions in the fields of air quality, transportation and transportation demand management.

The West San Gabriel Valley Planning Council should encourage the County of Los Angeles to establish programs which support West San Gabriel Valley air quality policies on a countrywide basis where appropriate, and which apply to the unincorporated pockets within the West San Gabriel Valley for consistency with local programs.

Related Policies and Programs:

Air Quality Element Policy Objectives 1a, 1b, and 3e.

West San Gabriel Valley Air Quality Plan Policy #2.

SCAG Regional Comprehensive Plan (RCP).

PROGRAM 3:PUBLIC EDUCATION

Encourage greater public participation in voluntary efforts to reduce air pollution through local public education programs and speakers bureaus. Possible programs for implementation of this policy include:

* Continue to provide public information on ridesharing, local and regional transit, energy conservation, as well as on source reduction and recycling. Examples of media include but are not limited to briefings to local newspaper staff persons, articles in City newsletters, and the sponsorship of speakers bureaus.

* Incorporate information on voluntary actions to improve air quality in public education and information programs.

* Develop air quality information to be available to the public at the City libraries, parks, offices, and the Chamber of Commerce.

* Include information on air quality regulations, laws, incentives as well as information on what to do on smog alert days in local utility bills.

* Participate in the development of a clean air educational curriculum in cooperation with the SCAQMD, School District, and environmental organizations.

Responsible Agencies:

The Planning and/or Public Works Divisions will distribute educational materials to the public via the local libraries, community centers, parks and at City offices. The City will draft public education and information programs on voluntary actions the public can take to improve air quality .

SCAQMD provides municipalities with simple and accurate brochures and materials for distribution, that outline the permitting process, transportation demand management strategies, and other air quality strategies.

Related Policies and Programs:

Air Quality Element Policy Objectives 2a, 2b, 2c, and 5c.

West San Gabriel Valley Air Quality Plan Policy #9.

AQMP Control Measure M-H-2: Trip Reduction for Schools, would establish a system where schools would select from a pre-approved list of strategies to comply with Regulation XV.

Trip Reduction Ordinance Handbook (Education and Information #1).

PROGRAM 4: MIXED USE AND CONVENIENCE SERVICE INCENTIVES

Encourage development of appropriate mixed-use projects that combine residential and commercial uses, and that provide on-site and near-site amenities such as child care and convenience services that reduce mid-day travel. Possible programs for implementation of this policy include:

Review and amend as necessary Zoning Ordinances, General Plan Land Use Elements, and/or Building and Fire Codes as necessary, to provide incentives (density bonuses, reduced parking provisions) for development of mixed-use projects.

Responsible Agencies:

The Planning Division will draft an amendment to the General Plan and/or implementing ordinances that institutes a mixed-use incentives program. Incentives may include density bonuses or reduced parking provisions for mixed-use projects.

City Council will review draft amendments for adoption.

Related Policies and Programs:

Air Quality Element Policy Objectives 1c, 4a, 4b, and 5b

AQMP Control Measure 17: Growth Management, requires that cities amend general plans, adopt ordinances, and develop interregional agreements to attain growth management goals at the subregional level by ensuring development is consistent with subregional VT reductions and/or jobs/housing balance performance goals in the GMP

West San Gabriel Valley Air Quality Plan Policy #10 and #11.

General Plan.

Zoning Ordinance.
Trip Reduction Ordinance Handbook (Mixed Land Uses #1, 2).

PROGRAM 5: DEVELOPMENT DENSITY

Encourage new development at or in close proximity to major bus transit corridors by maintaining appropriate development densities in existing and planned transit service areas and corridors. Similarly, development densities in the station areas along the Burbank-Glendale-Los Angeles candidate corridor rail line should be reviewed to encourage new development that would take advantage of rail operations. Possible programs for implementation of this policy include:

* Ensure that the highest development intensities are permitted in the transit service corridors.

* Amend land use intensities as necessary to encourage development near stations proposed along the candidate Burbank-Glendale-Los Angeles rail corridor

Responsible Agencies

The Planning Division will coordinate with the Public Works Division to identify important transit service corridors identified in the Transit Master Plan where this policy would be most effective.

The Planning Division will revise as necessary the Land Use and Circulation Element of the General Plan to allow the highest development intensities in the transit and proposed rail service corridors of the City.

The City Council will review the revisions to the Land Use and Circulation Elements for adoption.

Related Policies and Programs:

Air Quality Element Policy Objectives 1c, 4a, 4b, and 4d

AQMP Control Measure 17: Growth Management, requires that cities amend general plans, adopt ordinances, and develop interregional agreements to attain growth management goals at the subregional level by ensuring

development is consistent with subregional VT reductions and/or jobs/housing balance performance goals in the GMP

West San Gabriel Valley Air Quality Plan Policy #10.

LACMTA 30-Year Plan.

SCAG Regional Comprehensive Plan (RCP).

General Plan.

Trip Reduction Ordinance Handbook (Land Use and Densification #1, #2, #3, #4).

PROGRAM 6:TELECOMMUTING

Telecommuting involves occasionally working at home, or at a nearby office other than the normal workplace, to reduce either vehicle trips or vehicle miles traveled. Promote telecommuting by Glendale residents and Glendale businesses by making Home Occupation Permit information readily available to the public. Develop a brochure specifically for telecommuting to be available at the Permit Services Center, libraries, Chamber of Commerce, and other public locations.

Continue to develop telecommuting opportunities for City employees.

Coordinate telecommuting by sharing City office space with other cities or private businesses which make office space available to City of Glendale employees on a part-time basis.

Responsible Agencies

The Planning Division and/or Public Works Division will develop and distribute a brochure which encourages telecommuting by Glendale residents.

The Public Works Division will coordinate telecommuting efforts for City employees and evaluate opportunities for the sharing of work space.

Related Policies and Programs:

Air Quality Element Policy Objectives 1a, 1b, 1c, 2a, 3d, 3e, and 5d.

West San Gabriel Valley Air Quality Plan Policy #23

AQMP control Measure 1a: Person Work Trip Reduction, requires that local governments, as employers, implement programs to reduce vehicle work trips by 12% by December 31, 1999; 20% by December 31, 2004; and 30% by December 31, 2010.

AQMP Control Measure M-H-5: Enhanced Regulation XV refers to the SCAQMD expansion of Regulation XV to meet regional 1.5 Average Vehicle Ridership (AVR) requirement for all commute vehicles by 1992.

AQMP Control Measure 2a: Employer Rideshare and Transit Incentives, requires that by December 31, 1992, cities adopt ordinances or regulations to require facilities and buildings with 100 + employees to submit trip reduction plans. Local governments may adopt one trip reduction ordinance that includes specific individual provisions/traffic reduction targets for rideshare, transit incentives, alternate work weeks, telecommuting and other trip reduction strategies. Expansion of Reg XV is to cover employers with 25-99 employees and multi-tenant buildings with 25+ employees if previous program is ineffective by July 1, 1995.

Trip Reduction Ordinance Handbook (Telecommuting #1, Teleconferencing #1) .

PROGRAM 7: PARKING MANAGEMENT AND ON-SITE AMENITIES

Promote site design which is friendly to pedestrians, bicycles, and transit and provides preferential parking for bicycles, carpools, vanpools, and low-emission and zero-emission vehicles. On-site employee services and amenities should be encouraged to reduce non-commuting trips and facilitate ridesharing. Possible programs for implementation of this policy include:

* Develop an enhanced ordinance or an incentive program for preferential parking spaces for bicycles, carpools, vanpools, or low-emission and zero-emission vehicles.

* Develop incentives for site design which is pedestrian, bicycle, and transit friendly.

* Develop ordinances or incentive programs for on-site employee services such as lockers and showers, lounges, automated teller machines, and cafeterias. In addition to these services, the ordinance could include on-site child care requirements individually or in conjunction with businesses in the immediate vicinity. The incentives would focus on a reduction of required parking spaces for sites with a comprehensive Transportation Demand Management Program, including the use of services provided by the Glendale Transportation Management Association.

* Develop incentives specifically designed for businesses not regulated by Rule 1501.

Responsible Agencies:

The Planning Division will develop ordinances or incentive programs to establish preferential parking spaces for bicycles, carpools, vanpools, low-emission and zero-emission vehicles.

The Planning Division will draft an ordinance or incentive program for site design friendly to pedestrians, bicycles, and transit and for on-site employee services such as lounges, banking and cafeterias. In addition to these services, the ordinance or incentive program would address on-site child care facilities, individually or in conjunction with businesses in the immediate vicinity

The City Council will review said ordinances or incentive programs for adoption.

Related Policies and Programs:

Air Quality Element Policy Objectives 1a, 1c, 3d, 4a, 5b, 5e

West San Gabriel Valley Air Quality Plan Policy #24

AQMP Control Measure M-H-5: Enhanced Regulation XV refers to the SCAQMD expansion of Regulation XV to meet regional 1.5 Average Vehicle Ridership (AVR) requirement for all commute vehicles by 1992.

AQMP Control Measure M-H-3. Supplement Development Standards requires that by 1993 jurisdictions adopt ordinances that specify minimum supplemental development standards for new projects including construction, grading, and demolition standards, urban tree planting, support for non-motorized transportation modes, vehicle idling, and preferential parking spaces for carpools.

AQMP Control Measure M-H-1: Environmental Review Program, establishes standards for air quality analyses in EIRs and institutes a review program where SCAQMD validates adequacy of analyses for local governments.

AQMP Control Measure 1a: Person Work Trip Reduction, requires that local governments, as employers, implement programs to reduce vehicle work trips by 12% by December 31, 1999; 20% by December 31, 2004; and 30% by December 31, 2010.

AQMP Control Measure 2a: Employer Rideshare and Transit Incentives, requires that by December 31, 1992, cities adopt ordinances or regulations to require facilities and buildings with 100+ employees to submit trip reduction plans. Local governments may adopt one trip reduction ordinance that includes specific individual provisions/traffic reduction targets for rideshare, transit incentives, alternate work weeks, telecommuting and other trip reduction strategies. Expansion of Reg XV is to cover employers with 25-99 employees and multi-tenant buildings with 25+ individuals if previous program is ineffective by July 1, 1995.

AQMP Control Measure 2b: Parking Management, outlines a strategy of local adoption of an Air Quality Element which includes parking management measures. Some measures might include an increase to daytime parking fees, establishing a surcharge on parking for single occupancy vehicles, and/or a discount for multiple occupancy vehicles.

Trip Reduction Ordinance Handbook (Bicycle and Pedestrian Improvements #2, Mixed Land Uses #3, Rideshare Support Facilities #1 and #3, Parking Supply #1).

LACMTA Congestion Management Program (CMP).

Zoning Ordinance.

AQMP Control Measure M-H-3: Supplement Development Standards requires that by 1993 jurisdictions adopt ordinances that specify minimum supplemental development standards for new projects including construction, grading, and demolition standards, urban tree planting, support for non-motorized transportation modes, vehicle idling, and preferential parking spaces for carpools.

AQMP Control Measure M-H-1: Environmental Review Program, establishes standards for air quality analyses in EIRs and institutes a review program where SCAQMD validates adequacy of analyses for local governments.

PROGRAM 8: TRANSIT PASS SALES

Promote the sales of monthly transit passes at more locations around the City.

Responsible Agencies

The Public Works Division will work with the Glendale TMA and LACMTA to identify additional locations for transit pass sales. Potential locations include the Civic Center. Glendale Galleria, and Montrose Shopping Park.

Related Policies and Programs

Air Quality Element Policy Objectives 4b and 5d

West San Gabriel Valley Air Quality Plan Policy #27

AQMP Control Measure M-H-5: Enhanced Regulation XV refers to the SCAQMD expansion of Regulation XV to meet regional 1.5 Average Vehicle Ridership (AVR) requirement for all commute vehicles by 1992.

AQMP Control Measure 1a: Person Work Trip Reduction, requires that local governments, as employers, implement programs to reduce vehicle work trips by 12% by December 31, 1999; 20% by December 31, 2004; and 30% by December 31, 2010.

AQMP Control Measure 2a: Employer Rideshare and Transit Incentives, requires that by December 31, 1992, cities adopt ordinances or regulations to require facilities and buildings with 100+ employees to submit trip reduction plans. Local governments may adopt one trip reduction ordinance that includes specific individual provisions/ traffic reduction targets for rideshare, transit incentives, alternate work weeks, telecommuting and other trip reduction strategies. Expansion of Reg XV is to cover employers with 25-99 employees and multi-tenant buildings with 25+ employees if previous program is ineffective by July 1, 1995.

PROGRAM 9: BICYCLE FACILITIES

Develop and implement a bicycle facilities program to support alternative transportation modes. This would involve establishing local and areawide bicycle master plan, routes and amenities. Possible programs for implementation of this policy include:

* Develop a Bicycle Master Plan and/or amend the Circulation Element of the General Plan to increase and upgrade the existing bicycle facilities. The Bicycle Master Plan should also consider routes which may be appropriate for electric "golf-cart" type vehicles.

* Implement bicycle parking requirements by amending the Zoning Ordinance as needed. New or expanded commercial or industrial projects over 10,000 square feet would be required to provide bicycle parking spaces. The project size as outlined in the AQMP, is 10,000 square feet, whereas in the CMP it is 50,000 square feet.

* Include bicycle facility upgrades in the City's capital improvements and consider bicycle facilities during routine repaving/restriping of roads

* Coordinate bicycle facilities with those in surrounding jurisdictions and encourage development of subregional bicycle networks.

* Coordinate connections of bicycle facilities with the Glendale Transportation Center, Park and Ride, and other multi-modal transfer facilities.

* Identify and pursue federal, state, and regional funding sources for bicycle facilities.

Responsible Agencies

The City Planning Division and Public Works Division will draft a Bicycle Master Plan and or an amendment to the Circulation Element of the General Plan to increase and upgrade the existing bicycle facilities. The Planning Division would draft an amendment to the Zoning Ordinance requiring commercial or industrial developments over 10,000 square feet to provide bicycle parking spaces.

The City Council will review the Bicycle Master Plan and other proposed transit amendments and ordinances for adoption.

The Public Works Division will propose capital improvements for bicycle facilities and would review restriping plans when roads are repaved.

Related Policies and Programs:

Air Quality Element Policy Objectives 1a, 1b, 1c, 4a, 4b, 4d, 4e, 4f, and 5c

West San Gabriel Valley Air Quality Plan Policy #39

AQMP Control Measure 1b: Non-Motorized Transportation requires that by December 31, 1993, bicycle routes be included in General Plans to support trip reduction programs and implement programs to develop routes and support facilities. In addition, enact an ordinance requiring new commercial/industrial development over 10,000 square feet to provide bicycle parking spaces. Major new commercial and industrial facilities (over 100,000 square feet) to provide bicycle lockers/showers.

AQMP Control Measures M-H-3: Supplement Development Standards requires that by 1993 jurisdictions adopt ordinances that specify minimum supplemental development standards for new projects including construction,

grading, and demolition standards, urban tree planting, support for non-motorized transportation modes, vehicle idling, and preferential parking spaces for carpools.

Congestion Management Program (CMP).

Trip Reduction Ordinance Handbook (Bicycle and Pedestrian Improvements #2, #4).

PROGRAM 10: REGULATION OF LEAF BLOWERS

Prohibit the use of leaf blowers that contain internal combustion engines and, in conjunction with the SCAQMD, provide enforcement. Internal combustion engines contribute to the amount of ozone, carbon monoxide and nitrogen oxides in the air. In addition, the dust generated by the leaf blower contributes to the amount of PM_{10}. Possible programs for implementation of this policy include:

* Adopt an ordinance prohibiting the use of leaf blowers that contain internal combustion engines.

* Develop policies which may include only allowing leaf-blowers with electric engines, or requiring extra long nozzles that keep particles closer to the ground.

Responsible Agencies

The Planning Division will facilitate the development of an ordinance that prohibits the use of leaf blowers with internal combustion engines.

The City Council will review said ordinance for adoption.

Related Policies and Programs:

Air Quality Element Policy Objectives 1a and 1c

West San Gabriel Valley Air Quality Plan Policy #43

AQMP Control Measure M-I-7: Eliminate Leaf Blowers refers to the SCAQMD intent to ban the sale and use of leaf blowers in 1994, and local jurisdictions would be required to assist SCAQMD with enforcement of this measure.

AQMP Control Measure M-H-7: Indirect Source Registration Program.

PROGRAM 11: LANDSCAPING AND DESIGN

Encourage balancing priorities for low-emitting trees and shrubs relative to the need for xeriscape and design factors. Possible programs for implementation of this policy include:

* Monitor ongoing research regarding the Reactive Organic Gas (ROG) emissions from plants.

* When sufficient information is available for meaningful regulation, develop municipal design and landscaping standards which take into account low-emitting landscaping, in addition to xeriscape and urban considerations.

Responsible Agencies

The City Planning Division and Parks, Recreation, and Community Services Division, in conjunction with the Design Review Boards, Planning Commission and the Parks, Recreation and Community Services Commission will coordinate the drafting of municipal design and landscaping standards.

The City Council will review the new design and landscaping standards for adoption.

Related Programs

Air Quality Element Policy Objective 3e
West San Gabriel Valley Air Quality Plan Policy #44 and #50

AQMP Control Measure M-H-3: Supplement Development Standards requires that by 1993 jurisdictions adopt ordinances that specify minimum supplemental development standards for new projects including construction, grading, and demolition standards, urban tree planting, support for non-motorized transportation modes, vehicle idling, and preferential parking spaces for carpools.

PROGRAM 12: HOME ENERGY CONSERVATION AND NATURAL GAS COMBUSTION

Support the SCAQMD in applying new technologies to water and space heaters. Encourage use of solar water and space heating in new construction. Possible programs for implementation of this policy include:

* Support the SCAQMD as technology becomes available by adopting regulations to require installation of flat plate solar collectors, low NO_x water heaters, or equivalent technologies to new swimming pool heating facilities.

* Support the SCAQMD as technology becomes available by adopting regulations for installation of flat plate solar collectors and low NO_x water and space heaters for new development.

* Review regulations related to solar water and space heating and amend as necessary to eliminate unnecessary obstacles to appropriate use of solar technology. Develop information for public use.

Responsible Agencies

The Public Works Division will facilitate the adoption of regulations for the installation of flat plate solar collectors and low NO_x space and water heaters.

The Public Works Division will review the new building standards and regulations to promote the use of new technologies to home and pool water heaters for adoption.

The Planning Division will review zoning and other ordinances related to solar technology and prepare recommendations for the Planning Commission and City Council.

The Public Service Division will develop an informal brochure on solar technology.

Related Programs

Air Quality Element Policy Objectives 1c and 3e

West San Gabriel Valley Air Quality Plan #49

AQMP Control Measure A-D-2: Control of Emissions from Swimming Pool Water Heating encourages local jurisdictions to support the SCAQMD in requiring installation of flat plate solar collectors, low NO_x heaters, or equivalent control technology.

AQMP Control Measure A-D-3: control of Emissions from Residential and Commercial Water Heating encourages local jurisdictions to cooperate with SCAQMD by requiring solar-assisted, low NO_x water heaters for all new residential and commercial water heaters in local building codes.

PROGRAM 13: DOWNTOWN ELECTRIC TROLLEY SYSTEM

Study the feasibility to construct and operate a fixed-route electric trolley to serve downtown Glendale. Follow with construction and operation if appropriate and funding sources are available.

Responsible Agencies

The Public Works Division will study potential routes, potential ridership, construction costs, and operating costs of an electric trolley system (rail or inflatable tire) to serve downtown Glendale.

The Public Works Division will identify funding sources and pursue these to develop and electric trolley project if determined feasible and desirable.

Once funding is secured, the Public Works Division would oversee construction and operation of the system.

Related Programs

Air Quality Element Policy Objectives 3e, 4c, and 5c.

West San Gabriel Valley Air Quality Plan Policy #22.

AQMP Control Measure M-H-5: Enhanced Regulation XV to meet regional Average Vehicle Ridership (AVR) requirement for all commute vehicles by 1992.

Trip Reduction Ordinance Handbook (Shuttle Services #2).

PROGRAM 14: PEAK PERIOD TRUCK TRAFFIC MANAGEMENT

Develop plans, in coordination with local businesses, to minimize truck travel during peak hours to increase the use of alternative truck routes during peak hours if peak-hour travel cannot be avoided.

Responsible Agencies

The Public Works Division will identify major truck trip generators in the city and determine the truck trip generation during peak hours.

The Public Works Division will assess whether or not congestion can be reduced through the rerouting or rescheduling of these truck trips.

The Public Works Division will work with local businesses to develop voluntary rescheduling or rerouting of truck traffic where congestion can be appreciably reduced.

Related Programs

Air Quality Element Police Objectives 2a, 2b, 5a, 5d, 5f

West San Gabriel Valley Air Quality Plan Police #9

AQMP Control Measure 3a: Truck Dispatching, REscheduling, and Rerouting encourages local jurisdictions to manage peak hour truck traffic to reduce congestion, thereby reducing higher emissions associated with stop-and-go traffic.

D. IMPLEMENTATION AND MONITORING

The thirty-six existing programs are ongoing or completed programs which have had or continue to have a commitment of City or business resources. The fourteen identified programs will require a commitment of financial resources, staff resources, or both, to ensure their implementation. Some of the programs involve one-time expenses, while others would involve ongoing funding. Table 5 addresses the implementation of the new or expanded programs. Monitoring will need to be incorporated into each new program as it is developed to assess effectiveness. In addition, existing programs will require monitoring to ensure that estimated trip reductions are achieved. Monitoring of these air quality programs will take place annually, using SCAQMD's Trip Reduction Ordinance Handbook to guide monitoring actions.

Table 5: Implementation Schedule

	Implementation Date	Start-Up Expenses	On-going Program Expenses
1. Coordinated Studies	1994	Minor staff	Minor printing
2. Coordinated Policies, Regs & Technology	1994	Minor staff	Minor printing
3. Public Education	1994-1996	Staff & Printing	Minor staff & printing
4. Mixed Use & Convenience Service	1994-1996	Staff	Negligible
5. Development Density	1994-1996	Staff	Negligible
6. Telecommuting	1994-1996	Staff & Printing	Minor or Staff Printing
7. Parking Management & On-Site Amenities	1994-1996	Staff	Negligible
8. Transit Pass Sales	1994-1996	Staff	Minor staff
9. Bicycle Facilities	1994-2000	Staff	Staff Maintenance, Capital Improvements
10. Regulation of Leaf Blowers	*	Staff	Staff
11. Landscaping & Design	*	Negligible	Negligible
12. Home Energy Conservation & Natural Gas Combustion	*	Staff	Negligible
13. Downtown Electric Trolley System	1995-2010	Staff, Consulting, Major Engineering and Construction	Major Maintenance
14. Peak Period Truck Traffic Management	1994-1996	Staff	Minor staff

*These measures depend upon further action by the SCAQMD prior to implementation.

Evaluation

A. CONSISTENCY WITH OTHER ELEMENTS OF THE GENERAL PLAN

The Air Quality Element is part of the City's' General Plan which includes elements required by State law and optional elements as follows:

Required Elements	Optional Elements
Land Use	Seismic Safety
Circulation	Scenic Highways
Housing	Historic Preservation
Conservation	Community Facilities
Open Space	Recreation
Noise	Air Quality
Safety	

Good planning sense and State law call for the "``General Plan and elements thereof (to) comprise an integrated, internally consistent and compatible statement of policies for the adopting agency`` (Government Code Sec. 65300.5). The Air Quality Element, by its nature has little relevance to all but five other elements: Land Use, Circulation, Housing, Conservation, and Recreation. Consistency with each of these elements is discussed below

LAND USE - All residential, commercial, industrial, and public/semi-public land uses in the City generate both stationary and vehicular air pollution emissions. The Air Quality Element was created in recognition of this relationship. Policy objectives call for the coordination of land-use planning with existing and planned transportation systems and non-polluting transportation (i.e., walking, bicycling) in future development. New programs seek to create incentives for mixed-use development and focus development density around transit corridors. Implementation of the Air Quality Element may involve future changes to development densities and intensities of the Land Use Element. However, any changes will continue to be consistent with the goals outlined in the Land Use Element.

CIRCULATION - The primary local responsibility under the 1991 Air Quality Management Plan and 1992 Carbon Monoxide Plan is the reduction of air emissions from vehicle trips. Policies in the Air Quality Element aim to reduce the reliance on automobile transportation. Programs call for an expansion of bicycle facilities and focusing development within transit service and the candidate rail service corridors. These programs will ultimately affect buildout circulation patterns. The policies and programs of the Air Quality Element are consistent with the Circulation Element in that they promote energy conservation, reduce pollution, promote manageable growth opportunities, improve access and mobility and develop a balanced multi-modal circulation system.

HOUSING - The Housing Element of the General Plan calls for a wide range of housing types to meet existing and future needs of City residents, housing services for low and moderate income residents, and housing sensitive

to environmental and social needs. The Air Quality Element addresses these goals by encouraging housing which is close to public transportation systems and encouraging mixed-use opportunities. These programs could reduce the cost of housing by increasing densities or decreasing parking requirements, establishing a clear consistency with the goals of the Housing Element.

CONSERVATION - The Conservation Element, completed in 1993, references the preparation of an Air Quality Element. However, no specific policies are suggested.

RECREATION - The current Recreation Element, adopted in 1972, focuses its policies on the acquisition and development of recreational facilities. However, as noted the background report of this element, recreational opportunities, particularly athletic sports opportunities, are greatly reduced during high smog conditions. The efforts of the City of Glendale along with other cities and agencies in Southern California to improve air quality will greatly improve recreational opportunities. The Planning Division is currently preparing an updated and revised Recreation Element for consideration by Council.

B. COMPLIANCE WITH THE 1991 AQMP AND 1992 CO PLANS

The 1991 Air Quality Management Plan (Appendix IV-E) calls for local governments to address air quality in the General Plan, either as a separate element, or through other elements of the General Plan. The AQMP references a 1990 SCAG document entitled ""Guidelines for the Development of Local Air Quality Element"" to determine compliance with the AQMP. The Guidelines call for the Air Quality Element to address Transportation, Land Use, Particulate and Building Emissions, and Energy Conservation in order to meet the minimum requirements of the AQMP.

The Air Quality Element meets the requirements of the AQMP by addressing existing and planned efforts of the city in these categories. A commitment to the staff and financial resources for existing programs is made through the City budget. A schedule to implement new or expanded programs is given in the Implementation Section of the Element.

C. TRIP REDUCTION CREDITS

As mentioned previously, the City of Glendale is responsible for the reduction of 5,235 daily vehicle trips by 1994 in order to meet its local share of 365,000 daily vehicle trips reduced throughout the South Coast Air Basin. These numbers were developed by the SCAQMD and LACMTA to demonstrate sufficient progress toward achieving federal clean air standards. This section documents eixsting efforts by the City of Glendale toward achieving this target. The new or expanded programs will provide additional vehicle trip reductions. However, until these programs are fully developed , the vehicle trip reductions could not be eliminated.

The December, 1993 SCAQMD Trip Reduction Ordinance Handbook was used to calculate vehicle trip reductions. This handbook identifies eligible programs and calculation methods. Some programs such as the Park and Ride facility, will reduce vehicle miles traveled more than it will reduce vehicle trips, since most users will drive to this facility. The handbook has provided an "emission equivalent of a vehicle trip" in order to obtain vehicle trip reduction credits for such programs where traveling distance is reduced, rather than the trip itself.

BEELINE SHUTTLE

The Beeline currently operates on 5 intra-city shuttle-bus routes. Headways on the routes range from 12 to 25 minutes. Service hours vary by route, beginning between 6:00 AM and 10:00 AM, and ending between 3:00 PM and 6:30 PM. Service is provided Monday through Saturday. The cost per ride is 25 cents, and MTA passes are not accepted. Service began on these 5 routes on November 1st, 1993. The average daily boardings have gone from 2,811 to 4,142 in the first seven weeks of operation, an increase of 47 percent. Ridership is expected to continue to increase significantly during the first year of operation, carrying at least daily passengers after its first year of operation. Approximately 75 percent of Beeline users previously have drive alone. Of the Beeline users who would previously have driven alone, 72 percent do not work for companies subject to Rule 1501, based on a citwide average.

The following calculation is used for determining vehicle trips reduced (VTR):

VTR = ***SH*** (Average Daily Shuttle Ridership) **x** ***REG*** (Percentage of Employees not Regulated by Rule 1501) **x** ***PM*** (Previous Single-occupant vehicle mode split)
SH = 3,600
REG = 93%
PM = 80%
VTR = 3,600 **x** 93% **x** 80% **=** 2,678

TABLE 6
Trip Reduction Credits

Program	Daily Vehicle Trips Reduced
Beeline Shuttle	2,678
Transportation Center Express Shuttle	348
San Fernando Road/Fairmont Avenue Park and Ride	164
Trannsportation Demand Management Program	43
Glendale Transportation Management Association	47
LNX Program	554
Hillside Development Program	280
Bicycle Facilities	689
Total Daily Vehicle Trips Reduced	4,803
AQMP Target	5,235
Vehicle Trips Reduced as a Percentage of AQMP Target	91.7%

TRANSPORTATION CENTER EXPRESS SHUTTLE

The Civic Center Express and San Fernando Road Express Shuttle Buses are timed to connect with Metrolink Commuter Train service. They also serve other users of the Glendale Transportation Center at 400 Cerritos Avenue. The service is free. All users are assumed to have previously used single-occupant vehicles since the Metrolink trains cater to long-distance commuters. The service averaged 80 daily boardings before the January 17, 1994 earthquake. Ridership figures since the earthquake have been averaging 484 daily boardings. This ridership is expected to be constat through 1994 as regional freeways are under repair fro damage caused by the earthquake.

The following calculation is use for determining vehicle trips reducted (VTR):

VTR = ***SH*** (Average Daily Shuttle Ridership) **x** ***REG*** (Percentage of Employees not Regulated by Rule 1501) **x** ***PM*** (Previous Single-occupant vehicle mode split)
SH = 484
REG = 72% (See program 1 for assumptions)
PM = 100%
VTR = 484 x 72% **x** 100% **=** 348

SAN FERNANDO ROAD/FAIRMONT AVENUE PARK and RIDE FACILITY

The City is currently developing a Park and Ride lot on the corner of San Fernando Road and Fiarmont Avenue. The lot will have about 180 spaces. Caltrans has estimated this lot will have about 180 spaces. Caltrans has estimated this lot to be fully utilized soon after the opening due to its strategic location at the junction of the Golden State and Ventury Freeways. In addition, about 7 - 9 percent of the users of this facility will be dropped off. The average one-way trip from the Park and Ride lot is estimated to be 10 miles, the distance to downtown Los Angeles.

The following calculation was used to detmine equivalent vehicle trips reduced:

VTR = [***OCC*** (Occupancy of Park and Ride parking spaces, number) **x** ***EVMTR*** (Estimated Vehicle Miles Traveled Reduced per user) ÷ ***EVT*** (Emissions Equivalent to a Vehicle Trip) **x** ***PM*** (Previous Single-occupancy Mode Split) **x** ***REG*** (Percentage of Employees not regulated by Rule 1501] **+** [**NOE** (Number of Employees dropped off at Park and Ride Lot) **x** **TPE** (Daily Trips per Employee) **x** **PM** (Previous Single-Occupant Vehicle Mode Split) **x** **REG** (Percentage of Employees not regulated by Rule 1501)]

OCC = 180
EVMTR = 15.6
PM = 85%
REG = 72%
NOE = 15
TPE = 2.5

VTR = (180 **x** 20 ÷ 156 **x** 85% **x** 72%) **+** (15 **x** 2.5 **x** 85% **x** 72%) **=** 164

TRANSPORTATION DEMAND MANAGEMENT PROGRAM (TDM)

On March 2, 1993, City Council adopted a version of the "Model TDM Ordinance" prepared by ther former Los Angeles CountyTransportation Commission. This model ordinance was intended to demonstrate local compliance with the statewide Congestion Management Program. Its intent was to reduce trips from new development. This also reduces air emissions and assists the City in meeting its AQMP target trip reduction. The ordinance requires new non-residential development of 25,000 square feet or more to provide ridesharing information to its occupants. New development of 50,000 square feet or more requires preferential parking for carpools and vanpools and bicycle parking in addition to ridesharing information. New non-residential development of 100,000 square feet also requires vanpool/carpool pick-up and drop-off areas, as well as additional bicycle and pedestrian amenities. Since no major development projects will be completed in 1994, this program will not have a substantial effect, however it will become more important for future projects.sed for determining vehicle trips reduced (VTR):

<u>Bicycle Amenities</u>

VTR = ***NOE*** (Number of Employees Affected) **x** ***TPE*** (Daily Trips Per Employee) **x** ***REG*** (Percent of Employees not Regulated by Rule 1501) **x** ***ETR*** (Estimated Trip Reduction Factor) **x** ***PM*** (Previous Single Occupancy Vehicle Mode Split)

NOE = 400
TPE = 2.5
REG = 72%
ETR = 0.5%
PM = 85%
VTR = 400 x 2.5 x 72% x 0.5% x 85% = 3

Carpool/Vanpool Preferential Parking & Pick-Up/Drop-Off Area

VTR = ***NOE*** (Number of Employees Affected) **x** ***TPE*** (Daily Trips Per Employee) **x** (Percent of Employees not Regulated by Rule 1501) **x** ***ETR*** (Estimated Trip Reduction Factor) **x** ***PM*** (Previous Single Occupancy Vehicle Mode Split)

NOE = 400
TPE = 2.5
REG = 72%
ETR = 1.0%
PM = 85%
VTR = 400 x 2.5 x 7.2% x 1.0% x 85% = 6

Commuter Information Areas

VTR = ***NOE*** (Number of Employees Affected) **x** ***TPE*** (Daily Trips Per Employee) **x** ***ETR*** (Estimated Trip Reduction Factor) **x** ***PM*** (Previous Single Occupancy Vehicle Mode Split)

NOE = 1,000
TPE = 2.5
REG = 72%
ETR = 2.2%
PM = 85%
VTR = 1,000 x 25 x 72% x 2.2% x 85% = 34

GLENDALE TRANSPORTATION MANAGEMENT ASSOCIATION (GTMA)

In addition to providing support services to empooyers regulated by Rule 1501, the GTMA has begun an outreach program to help provide commuting alternatives to employers not regulated bu Rule 1501. Currently five employers with 265 employees are enrolled in this program. The number of employees is expected to rise to 500 in 1994. The following calculations are used for determining vehicle trips reduced (VTR):

VTR = ***NOE*** (Number of Employees Affected) **x** ***TPE*** (Daily Trips Per Employee) **x** ***REG*** (Percent of Employees not Regulated by Rule 1501) **x** ***ETR*** (Estimated Trip Reduction Factor) **x** ***PM*** (Previous Single Occupancy Vehicle Mode Split)

NOE = 500
TPE = 2.5
REG = 100%
ETR = 4.4%
PM = 85%
VTR = 500 x 2.5 x 100% x 4.4% x 8.5% = 47

LNX PROGRAM

A study by the Library Division has estimated the LNX program to have 227 daily users in 1994. Each of the users would directly be eliminating two single-occupancy vehicle trips.

Vehicle Trips Reduced (VTR) = 554

HILLSIDE DEVELOPMENT PROGRAM

The Planning Division has calculated potential hillside development in Glendale to have been reduced from 1,042 housing units to 724 housing units with its recent General Plan Amendment. These hillside houses are not serbed by transit and generate significant greater traffic than development in the downtown Glendale area, where services are convenient for walking or the Beeline. By amortizing the buildout over 20 years, the Planning Division estimates 28 new hillside houses were not built by 1994k, as a result of the General Plan Amendment.

The following calculation is used for determining vehicle trips reduced (VTR):

VTR = ***ADT/U*** (Average Daily Trips Per Housing Unit) **x** ***SZ*** (Number of Units Affected) **x** ***PM*** (Previous Single-Occupancy Vehicle Mode Split)

ADT/U = 10
SZ = 28
PM = 100%
VTR = 10 x 28 x 100% = 280

BICYCLE FACILITIES

As a new program, the City has begun the process to prepare a comprehensive bicycle plan and implementation program for the City. This plan will identify existing and potential bicycle lanes, routes and paths in the City and will include a commitment to implementation. The area of study in the plan will be Citywide and connections to bicycle facilities in surrounding cities will be considered. This bicycle plan is expected to encourage bicycling for both work and non-work trips. With 90,000 jobs in Glendale, an average of 2.5 daily vehicle trips per employee and 85 percent of employees driving alone, a 0.5% use of bicycles for commuting would reduce almost 1,000 vehicle trips daily. Non-commuting trips by bicycle could account for several hundred additional vehicle trips reduced each day.

The following calculation is used for determining vehicle trips reduced (VTR):

VTR = **NOE** (Number of Employees) **x TPE** (Trip Per Employee) **x REG** (Percent of Employees not regulated by Rule 1501) **x ETR** (Estimated Trip Reduction Factor) **x PM** (Previous Single Occupancy Vehicle Mode Split)

NOE = 90,000
TPE = 2.5
REG = 72%
ETR = 0.5%
PM = 85%
VTR = 90,000 **x** 2.5 **x** 72% **x** 0.5% **x** 85% = 689

Glossary of Terms and Acronyms

Air Quality Standard - A numerical limit on the allowable concentration of a specific pollutant in the ambient air, as established by the Federal Environmental Protection Agency and/or the State Air Resources Board. Primary standards set by these agencies are based on the levels required to protect public health of the general population and sensitive groups (such as the young and the elderly). Federal secondary standards are based on levels required to protect public welfare (including preventing deterioration of crops, landscaping, natural resources, visibility, and building materials). Standards have been established for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), suspended particulate matter (PM_{10}), sulfates (SO_x), lead (Pb), hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particulates.

AQMP - Air Quality Management Plan

ARB - California Air Resources Board.

ATSAC - Automated Traffic Surveillance and Control. Caltrans and the City of Los Angeles Department of Transportation (LADOT) are incorporating this system for computerized traffic signal operation into the Smart Corridor demonstration project, which will be used as a model for other smart corridor projects, including Colorado Street in Glendale.

Automobile-Oriented Development - Site planning with uses configured for ease of access by car (See Pedestrian-Oriented Development and Transit-Oriented Development).

AVR - Average Vehicle Ridership. AVR is a measurement of the success of carpooling strategies.

Bicycle Lane - A bicycle lane striped on a roadway shared with other vehicles. Also known as Class II Bicycle Facility.

Bicycle Path - A bicycle path in a right-of-way separate from other vehicles. For example, the Ballona Creek Bicycle Trail. Also known as a Class I Bicycle Facility.

Bicycle Route - A bicycle route signed on a roadway shared with other vehicles. Also known as Class III Bicycle Facility.

Caltrans - California Department of Transportation.

Capital Improvement Program - A list of City-approved projects to improve transportation facilities and other infrastructure systems.

Carbon monoxide (CO) - A criteria air pollutant that is a highly toxic, odorless, colorless gas which binds to hemoglobin in the bloodstream in the place of oxygen molecules. By reducing the oxygen-carrying potential of blood, CO causes heart difficulties in people with chronic diseases, reduces lung capacity, impairs mental functioning, and may aggravate arteriosclerosis.

CCAA - California Clean Air Act. This act requires all regions of the state to attain California Clean Air Standards (stricter than federal standards).

CEC - California Energy Commission.

CHP - California Highway Patrol.

CMP - Congestion Management Program. A plan required by state law for certain counties to monitor, regulate and improve regional traffic flow conditions. LACMTA has prepared the CMP for Los Angeles County. Local General Plan Circulation Elements must be made consistent with the County CMP.

CO Plan - Federal Attainment Plan for Carbon Monoxide. Prepared by the SCAQMD in 1992, this plan demonstrates attainment of federal clean air standards for carbon monoxide by the year 2000.

Criteria pollutants - The six air pollutants regulated by federal standards, including ozone, carbon monoxide, particulates, nitrogen dioxide, sulfur dioxide and lead.

CTS - Commuter Transportation Services.

Density Bonus - The allowance of additional building density (square footage or number of residential units) in exchange for the provision of specific amenities such as affordable housing or child care services. Density bonus is often used as an incentive to encourage project developers to provide needed services or amenities.

Dial-A-Ride Service - A special on-demand transit shuttle service which, when provided, generally is for the elderly and disabled for transportation within a defined service area. (See also Fixed-Route Bus.)

EPA - Environmental Protection Agency

Exceedance - An occurrence of pollutant concentrations which exceed established air quality standards. For instance, data from the Pasadena air monitoring station indicated exceedances of the ozone standard on about one-in-three days in 1990.

FCAA - Federal Clean Air Act. First adopted in 1955, and most recently amended in 1990, this is the primary federal regulation which mandates the nation to attain clean air.

FETSIM - Fuel Efficient Traffic Signal Management.

FIP - Federal Implementation Plan. A requirement of the Federal Clean Air Act that the EPA develop a FIP for states which do not demonstrate satisfactory progress toward attainment of federal clean air standards.

Fixed Route Bus Service - Bus service that operates only on a designated path. Riders can depend on buses arriving within specific time period at specific stops; the buses do not change travel routes to accommodate special travel needs (See also Dial-A-Ride).

Flexible Fuel Vehicle - A vehicle which operates on low-polluting fuels, but could also burn unleaded gasoline.

Guaranteed Ride Home - A service provided by an employer to employees who carpool, vanpool or ride public transit, to provide rides home when necessary due to emergencies or occasional changes in commute schedule.

Headway - The time between two successive public transit (bus or rail) vehicles. A headway of 20 minutes means a frequency of 3 buses per hour.

HOV - High Occupancy Vehicle. A vehicle that is transporting several people, such as a bus or carpool.

HOV Lanes or Facilities - Roadways, lanes and associated facilities developed in a separate right-of-way designated for the exclusive use of vehicles with more than a preset number of occupants; such vehicles often include buses, taxis, carpools and vanpools.

Hydrogen sulfide (H_2S) - A hazardous air pollutant regulated by the state Air Resources Board through air quality standards in a manner similar to the criteria pollutants. It is emitted by mining, refining, manufacturing and decomposition of organic matter, and results in acute effects on the nervous and respiratory systems.

Impact Fee - A charge assessed by a city on new private construction to offset the public costs of needed transportation infrastructure improvement ore other needed uses or services, such as schools, affordable housing or parks.

Infrastructure - Those improvements which serve as the underlying foundation for land development. These improvements include streets, storm sewers, sanitary sewers, water supply and other utilities.

Jobs-Housing Balance - Jobs-Housing balance refers to land use policies which are intended to reduce traffic by bringing home and work locations closer together.

LACMTA - Los Angeles County Metropolitan Transit Authority.

LACMTA 30-Year Plan - a strategic planning tool or framework to develop and evaluate the most cost-effective means of providing for Los Angeles County's transportation needs.

LACTC - Los Angeles County Transportation Commission. Merged with SCRTD to form LACMTA.

LEAD (Pb) - A criteria air pollutant emitted from leaded gasoline and diesel combustion and metal smelting and processing facilities. Lead affects the formation of blood cells, the kidneys, and central nervous system, especially in young children less than 5 years old. Requirements for sale of unleaded gasoline vehicles have resulted in attainment of air quality standards for lead for many years.

LRT - Light Rail Transit. Medium capacity rail public transit that provides passenger capacities ranging from 2,000 to 20,000 passengers an hour. Light rail can operate on either grade separated rights-of-way, reserved rights-of-way, or in mixed traffic on city streets.

M85 - A blend of 85% methanol and 15% unleaded gasoline.

M100 - 100% methanol

MTA - L. A. County Metropolitan Transportation Authority.

Mixed Use - Type of development which includes a combination of land uses within a single development (such as residential and commercial).

Mode - In transportation, refers to the type of transportation used, such as automobile, bus, bicycle, walking, etc.

Multi-Modal - Utilizing different types of transportation like auto, bus, bicycle, walking, etc., to move from one place to another.

Nitrogen dioxide (NO_2) - A criteria air pollutant that is a reddish-brown toxic gas formed by fuel combustion. This chemical compound increases the incidence of chronic bronchitis and lung irritations, and reduces resistance to infections such as influenza. In the presence of hydrocarbons, NO_2 is a precursor to ozone formation.

NMOG - Non-Methane Organic Gases - See Reactive Organic Gases

Ozone (O_3) - A criteria air pollutant that is a colorless gas. Ozone exposure results in eye irritation and damage to lung tissues, reduced resistance to colds and pneumonia, aggravates heart disease, asthma, bronchitis, and emphysema. It is not emitted directly from human sources, but comes from the reaction of hydrocarbons (HC) or reactive organic gases (ROG), and nitrogen oxides (NO_x) in the presence of sunlight in the atmosphere. Although ozone is the air contaminant for which standards are set, its precursors (HC and NO_x) are the pollutants which must be controlled. Ozone which results from this process should not be confused with stratospheric ozone, which is necessary to prevent exposure to harmful electromagnetic radiation.

Particulates - see suspended particulate matter.

Pedestrian-Oriented Development - Pedestrian oriented development systems provide clear, comfortable pedestrian access to commercial or mixed-use areas and transit stops. Pedestrian routes should be located along and visible from streets. Primary pedestrian routes and bikeways should be bordered by the entrances to buildings and public parks and uses. (See also Transit Oriented Development).

PMP - Parking Management Plan.

Proposition A - The half-cent sales tax approved by voters in Los Angeles County in 1980 for public transit. Of the Prop-A revenues, 25 percent is returned to local jurisdictions for local transit services, 35 percent is used by LACMTA to develop the countywide rail system, and 40 percent is allocated at the discretion of LACMTA.

Proposition C - Voter approved legislation, administered by Los Angeles County, which raises additional sales tax revenues for funding of transportation projects.

PUC - Public Utilities Commission.

Reactive Organic Gases - Organic compounds which are emitted into the air by both stationary, mobile and natural sources and combined with nitrogen oxides under sunlight to form the pollutant ozone.

RCP - Regional Comprehensive Plan. A plan in preparation by SCAG for the six-county area of Los Angeles, Orange, Riverside, San Bernardino, Ventura and Imperial Counties. The RCP is expected to be the blueprint for managing the growth and resources in the region and will contain policies and guidelines for local and subregional planning programs.

RECLAIM - Regional Clean Air Incentives Market. A program adopted by the SCAQMD in 1993 which allows certain stationary source industrial firms which reduce pollutants beyond target levels to sell "pollution credits" to other firms unable to attain pollution reduction targets.

Regulation XV - The set of rules adopted and administered by the SCAQMD requiring employers with work sites in the South Coast Air Basin of 100 employees or more to submit and implement TDM plans designed to increase the Average Vehicle Ridership.

Rideshare - Automobile trips that carry two or more people from home to work or to other destinations, such as carpools and vanpools.

RTIP - Regional Transportation Improvement Program.

SCAB - South Coast Air Basin

SCAG - Southern California Association of Governments.

SCAQMD - South Coast Air Quality Management District.

SCRTD - Southern California Rapid Transit District. Merged with LACTC to form LACMTA.

Air Quality Management Plan - Most recently adopted by SCAQMD in 1989 and 1991, with a three-year update planned for 1994, the AQMP provides a blueprint for long-term attainment of federal and state air quality standards in the South Coast Air Basin.

SIP - State Implementation Plan. A compilation of the state's regional Air Quality Management Plans (see AQMP) to show the state as a whole complies with the Federal Clean Air Act.

Smart Corridor - A transportation corridor designed to coordinate between a freeway and parallel arterials streets, to focus through-traffic into the freeway corridors. Certain mechanisms such as computerized and centrally controlled traffic signalization, electronic traffic advisories and higher traffic speeds are implemented to facilitate use of these corridors. (See ATSAC)

Staggered Work Hours - A method to reduce traffic congestion during the peak rush hours, by staggering the work start time for employees.

STIP - State Transportation Improvement Program.

Subscription Bus Service - Charter buses hired by employers to provide employees with transit service.

Sulfur dioxide (SO_2) - A criteria air pollutant that is a colorless gas with a pungent, irritating odor largely formed from fuel combustion. It irritates and damages lung tissue and aggravates symptoms of heart and lung disease. Both NO_2 and SO_2 react to form particulates; in the presence of moisture, they create acid mist.

Suspended particulate matter (PM_{10}) - A criteria air pollutant, also known as inhalable particulate matter that refers to small solid or liquid particles (aerosols), such as soot, dust, and mists. Particulates aggravate chronic heart and lung disease symptoms, produce respiratory problems, and often transport toxic elements such as lead, cadmium, antimony, arsenic, nickel, vinyl chloride, asbestos, and benzene compounds. Suspended particulates also absorb sunlight, producing haze and reducing visibility.

TCM - See Transportation Control Measure.

TDM - See Transportation Demand Management

Telecommuting - Working at home, through the use of a computer or other means, to avoid traveling to work during peak congestion periods.

TMA - Transportation Management Association, a parent organization of TMOs, used to monitor and coordinate TMOs throughout the City. A group of people and/or employers joined together in a legal agreement, whose purpose includes the sharing of TDM information. The Glendale TMA provides services to over 17,000 employees.

TMO - Transportation Management Organization, an organization of an employer or group of employers to facilitate the use of TDM measures to reduce traffic. A group of people and/or employers joined together in a legal agreement, whose purpose includes the sharing of TDM information.

Transportation Control Measures (TCM) - Steps taken by the City to adjust traffic patterns or reduce vehicle use with the objective of reducing vehicular emissions of air pollutants. TCMs are specifically called for under the AQMP.

Transportation Demand Management (TDM) - A program of specific measures designed to encourage alternatives to private automobile use and thereby reduce transportation demand. Such measures include carpool

and vanpool matching, preferential parking, transit ridership incentives and subsidies, guaranteed ride home, parking charges, bicycle facilities and amenities, staggered work hours and alternative work week programs.

Transportation Systems Management (TSM) A catch-all term for methods used to improve the operation of roadways and intersections by low-cost measures within the existing right-of-way. TSM includes both TDM and TCMs.

TRO - Trip Reduction Ordinance, an ordinance established to require, or provide incentives to, employers to implement TDM measures to reduce the amount of traffic they generate (due to trips by commuting employees, visitors, deliveries, etc.)

UMTA - Urban Mass Transit Administration.

Vehicle Miles Traveled (VMT) - VMT refers to lowering the overall vehicle miles traveled within a given community.

West San Gabriel Valley Planning Council - A voluntary association of planning professionals from 17 cities including Burbank, Glendale, and cities in the West San Gabriel Valley.

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